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Iran suppresses opium production

by **Jehan S. Saleh, M.D.**
Minister of Health of Iran

According to the information available, opium smoking was introduced into Iran in the second half of the nineteenth century from the east; since then, addiction to this drug has constituted a major problem in the economic and social, as well as the public health fields.

Prior to this date, the use of opium for medical purposes had been noted in Iran as early as the days of Avicenna in the tenth and early eleventh centuries. Opium smoking has always been looked upon as a shameful habit in Iran, and in 1910 legal steps were taken to prohibit completely the non-medical use of opium. In 1928, a bill giving the monopoly of opium to the Government was ratified by parliament, and it was arranged to diminish gradually the cultivation of the opium poppy in such a way that a complete ban could be imposed after a period of ten years. Heavy penalties were provided in this law for illegal use and illicit traffic in opium. The Government of Iran, in the year 1932, acceded to the International Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs, signed at Geneva on 13 July 1931. Later, in 1938, opium poppy cultivation was banned in twenty-five districts of the country. The Council of Ministers in 1946 issued a decree calling for the complete banning of the cultivation of the opium poppy. However, this decree was not ratified by parliament; and at the fourth session of the Commission on Narcotic Drugs, Iran was recognized as an opium producer, so that the ban was amended to limitation of cultivation. The Iranian Government has, however, always clearly indicated its intention to authorize opium poppy cultivation only in proportion to world medical and scientific needs.

Being aware of the seriousness of the problem of opium addiction in the country, and conscious of the significance of the problem from the international point of view, the writer, when he became Minister of Health, decided to direct all possible efforts toward the total banning of the cultivation of opium poppy in the country. I pleaded the case with the Senate and Majless for the urgent ratification of the entire opium bill and, after many stormy discussions in both houses of parliament, the bill was finally passed on 7 October 1955. Its text is as follows :

LAW BANNING THE CULTIVATION OF OPIUM POPPY AND USE OF OPIUM

ARTICLE ONE—From the date of the approval of this law, the cultivation of opium poppy, preparation and importation of narcotic drugs (opium, juice of opium and other components) and use of public dens for use of the said drugs, manufacturing and importation of relative equipment is prohibited throughout Iran.

ART. 2—From the date of the approval of this law six months' grace is given to addicts to report to the centres designated by the Ministry of Health, so that means of cure can be put at their disposal.

Note : The Government is bound, through the Agricultural Bank and other Governmental Institutions, to give long-term credits, also technical help to farmers who have no financial resources, within the limit of possibility, so that necessary facilities for change from opium poppy plantations to other cultivations may take place, and further the Government is bound to put sufficient credit at the disposal of the Ministry of Health for the execution of Article 2.

ART. 3—After expiration of the six months mentioned in the above Article, the use, holding, purchase and sale of narcotic drugs is prohibited.

ART. 4—The Government is obliged, one month from the date of the approval of this law, to prepare the executive regulations, the necessary punishments and fines for violations, and after approval by the competent Committees of both houses, put them into execution.

ART. 5—The Ministries of Health, Interior, Finance, Agriculture and Justice are responsible for the execution of this law.

This law, which has five articles and one note, was approved on Tuesday 11 Mehr 1334 (4 October 1955) by the Majless and after it was returned by the Senate, was confirmed and communicated to the Government on 7 Aban 1334 (30 October 1955) by the Majless.

At the time of the consideration of the bill, I made a statement to the following effect, which shows clearly the great importance of the question for my country:

" (i) the area under opium-poppy cultivation was 1/350th of the arable land of the country;

" (ii) the total opium harvest varied between 700 and 1,200 tons annually, and exports during the last ten years had averaged 90 tons annually;

" (iii) There were 1,500,000 opium addicts in Iran; about 2,000 kg of opium was smoked daily; and every year addiction to this drug caused 5,000 suicides, the premature death of about 100,000 people, and the abandonment to destitution of something like 50,000 children."

The subject of this bill has always been a controversial matter in Iran, because it involves a very acute economic problem for the farmer. The argument put forward in favour of the bill was that no economic advantage or reasoning can justify any issue where the health of the people, which is the basic asset of any country, is at stake. We have learned by experience that efforts directed only to limiting the production of opium and abolishing opium addiction are likely to meet with failure; that as long as the opium is accessible to the public, any anti-opium addiction campaign is useless. The passage of this law involving tremendous economic sacrifice is convincing evidence of Iran's interest and co-operation in international health affairs.

The bill includes three phases of activity :

1. the banning and total abolition of opium poppy cultivation;
2. the treatment of addicts;
3. the control of illicit opium traffic.

As I mentioned in my remarks in the Ninth World Health Assembly on this subject, strict control has been exercised over opium poppy cultivation and, since the enactment of the law, over 12,000 hectares of opium poppy have been ploughed under, and hundreds of dens have been closed throughout the country. Many custodial institutions for the treatment of addicts have been established, and millions of anti-opium pills have been distributed to the provinces where opium addiction is a problem.

The third aspect of the problem, however, remains to be solved, that is, the control of illicit opium traffic. Needless to say, unless the illicit traffic in opium is controlled, any efforts for the banning of cultivation, and any campaign against the use of it, will undoubtedly meet with failure. The Permanent Central Opium Board in its recent report[1] states: " It is a matter for satisfaction that the Government of Iran has now recognized the gravity of the problem and has decided to grapple with it, but it is evident that a number of difficulties will have to be overcome before their intentions can be fully and successfully carried into effect. The Board welcomes any positive step which may be taken to cope with so dangerous a situation and will watch with the greatest interest the result of the measures which are taken by the Government to implement its decision."

It is in the spirit of such a statement that I voice the plea of Iran to all countries and international organizations to give us a helping hand in the implementation of this most vital and universally significant law; to encourage and stimulate the enactment of similar laws in countries where poppy cultivation still remains as a source of income. The producing farmer in Iran has lost an excellent cash crop which is very difficult to replace by anything else giving the same return. The Government as well has lost a portion of its foreign exchange earnings so badly needed for social improvement schemes already planned. It is for these reasons, and in the light of the attitude shown by Economic and Social Council resolution 548 E (XVIII) recommending that the technical assistance services of the United Nations and the specialized agencies give due consideration to any request which the countries concerned may make for assistance in developing appropriate administrative or social measures, that Iran is requesting the technical assistance authorities and the United Nations to give her the particular consideration she deserves in her fight against this lucrative but evil drug.[2]

[1] E/OB/11.

[2] At its twenty-second session, on 2 August 1956, the Economic and Social Council adopted a resolution recognizing that the success of Iran in implementing the law suppressing opium production could not be accomplished without international co-operation, drew the attention of the technical assistance authorities of the United Nations and the specialized agencies to the importance of the speedy achievement of these aims, and invited these authorities to give due consideration to any requests, in addition to requests for technical assistance for other purposes, which the Government of Iran may make for technical assistance in that field. [Editor's note.]

The two following reports have been transmitted by the representative of the United States of America. They are complementary to the reports already published in Volume VIII, No. 2 : " Report of the Interdepartmental Committee on Narcotics to the President of the United States " and " Report of the Committee on the Judiciary of the United States on the Illicit Narcotics Traffic ".

Treatment and rehabilitation of narcotic addicts

Report of the Committee on the Judiciary of the United States Senate containing the Findings and Recommendations of the Sub-committee on Improvements in the Federal Criminal Code.

By Senate Resolution 67, adopted 18 March 1955, the Senate authorized the first nationwide investigation of the illicit narcotics traffic in the United States. Included in the scope of the inquiry was the direction that

" special attention be given to the extent, cause, and effect of unlawful uses of narcotics and marihuana . . . and to the additions and changes in the laws . . . necessary to combat the increasing narcotic addiction in the United States ".

A special aim of the investigation in this area was to find ways and means of bringing about greater success in the treatment and rehabilitation of drug addicts.

THE PROBLEM

While there are fewer drug addicts in the nation today than there were before the Harrison Narcotic Act was passed and before the Federal Bureau of Narcotics was created in 1930, the figure of at least 60,000 addicts today is more than the number reported by any other western nation.[1] In spite of the best efforts of federal agencies with present personnel and procedures, smuggling of illicit narcotics has not been halted. Two recent seizures of heroin and cocaine, valued at more than $10 million, were the largest single seizures of these drugs ever made in the United States. The traffic now costs over $500 million per year, to say nothing of the human lives shortened or destroyed.

Drug addiction and the illicit narcotics traffic, moreover, are responsible for approximately 50% of the total crimes committed in the large metropolitan areas and 25% of all reported crimes in the nation. Drug addiction is contagious. Addicts who are not hospitalized or confined spread the habit with cancerous rapidity to their families and associates. Yet less than 20% are confined. It is inevitable that this contagious problem will increase from year to year unless drug addicts are exposed to an effective treatment and rehabilitation programme, and unless those who fail to respond to treatment are placed in quarantine type confinement or isolation.

With this problem in mind, the sub-committee invited the nation's foremost authorities on drug addiction to attend special hearings held in New York devoted exclusively to an intensive examination of methods and facilities for treating and rehabiliting narcotics addicts. We heard 27 expert witnesses, including leading medical authorities and law-enforcement officers, for a total of 1,058 pages of testimony, and we received more than 2,000 pages of material in the form of supplementary statements and exhibits supporting and describing various alternative approaches to the over-all problem.[2]

The sub-committee has prepared legislation which provides for new and improved laws and enforcement procedures to help stamp out narcotics smuggling and peddling. It is particularly important now to focus attention on the proposals for treatment, rehabilitation, or confinement of narcotics addicts.

I. AN EXAMINATION OF THE SO-CALLED CLINIC PLAN FOR LEGAL DISTRIBUTION OF NARCOTICS TO DRUG ADDICTS

The greater part of the New York hearing was devoted to testimony for and against the recent proposals that the Federal Government establish a chain of " narcotic clinies " across the nation where drug addicts could obtain " shots " at little or no cost on a sustaining basis. The sub-committee considered it imperative that the proposal for " free drugs "—made most recently by the New York Academy of Medicine in its Report on Drug Addiction, dated 7 June 1955—be subjected to an immediate and intensive examination, for not only had it generated a bitter controversy among medical authorities and law-enforcement officials but, even more important, there were indications that the controversy was actually impeding law enforcement and efforts to improve and expand existing programmes for the treatment and rehabilitation of drug addicts.[3]

While the " clinic plan " embodies six major recommendations, the crux of the plan centres on its proposal to set up all over the country a system of dispensary clinics where drug

[1] See the sub-committee's preliminary report, Senate Report 4440, dated 27 January 1956, summarized in *Bulletin on Narcotics*, Vol. VIII, No. 2.

[2] Further testimony relating to causes, treatment, and rehabilitation was taken by the sub-committee in each of the 13 cities where hearings were held. Extended consideration was given to the local programmes being developed in Los Angeles, Detroit, Chicago and New York.

[3] A similar plan was proposed by the Richmond County Medical Society of New York and was subsequently approved by the New York State Medical Society.

addicts could obtain narcotics free or at a very nominal charge. Provisions would be made for registration, fingerprinting, and photographing to identify the addicts.

Clinics would be staffed with doctors, employment counsellors, psychiatrists, and others whose task would be to attempt to rehabilitate the addict and to help him find suitable employment. In the course of efforts at rehabilitation, the addict would continue getting a minimum supply of drugs. Eventually, attempts would be made to withdraw drugs gradually. However, if the addict failed to respond to the psychiatric treatment and other rehabilitation efforts of the clinic, he would be given " stabilizing " of " maintenance " doses of narcotic drugs for the rest of his life.

Based on the testimony received during the special hearings in New York and on a mass of other evidence adduced during our investigation, the sub-committee has made the following specific findings.

FINDINGS

THE SO-CALLED CLINIC PLAN FOR LEGAL DISTRIBUTION OF NARCOTICS IS TOTALLY UNWORKABLE, COMPLETELY CONTRARY TO ACCEPTED MEDICAL PRACTICE AND THEORY, AND WOULD AGGRAVATE RATHER THAN SOLVE THE PROBLEM OF DRUG ADDICTION

1. *Addicts must be hospitalized, in an atmosphere free of narcotic drugs, or treatment will fail.*

Under the provisions of the proposed " clinic plan ", the drug addict would be given drugs free, or sold drugs at a minimum cost, for the continued support of his addiction. This would be without hospitalization or other confinement. Thus, not only would the drug addict have available his regular supply of drugs at the clinic, but he would have access to additional drugs on the illicit market.

The sub-committee finds that this procedure, as a method of treatment, is almost unanimously rejected by the medical profession, with only the few proponents of the plan claiming that it would work. The Surgeon-General of the United States, Dr. Leonard A. Scheele, spoke for the overwhelming majority of the medical profession when he testified :

" Treatment of drug addiction must take place in a drug-free environment, in an institution with special facilities for gradual withdrawal of the addicting drug. . . . Our experience leads us to believe that the vast majority of addicts cannot be withdrawn from narcotics with hope for success without institutional treatment."

This opinion, expressed by the head of the Public Health Service, is well established and long-standing among medical authorities. Thirty-five years ago, Dr. Royal Copeland, health commissioner of New York City Health Department, whose department administered similar narcotic clinics in New York during the early 1920's, stated unequivocally that treatment would fail unless conducted in a drug-free environment :

" Without absolute control of the patient and his complete isolation from clandestine sources of supply, there is no hope of cure. Ambulatory treatment is fore-ordained to failure as long as there are secret and illegal methods of obtaining the drug. Under present conditions, it is my belief it will be a very rare instance indeed when a patient is cured outside a hospital, or in the absence of equally well-controlled conditions."

In 1924, the American Medical Association established the following view and policy of the medical profession, and this was reaffirmed before our sub-committee by Dr. Leo H. Bartemeier, chairman, council on mental health, American Medical Association :

" The only proper and scientific method of treating drug addiction is under such conditions of control of both the addict and the drug, that . . . [there is] no chance of any distribution of the drug of addiction to others, or opportunity for the same person to procure any of the drug from any source other than from the physician directly responsible for the addict's treatment."

2. *Ambulatory treatment, where a supply of narcotics is either handed to the drug addict or where he must come to the clinic for " shots ", is totally unsatisfactory.*

There are only two alternatives in the proposed plan to treat drug addiction on an ambulatory basis : either the drug addict must be given a supply of narcotic drugs to take with him and administer himself as he desires, or he must be required to report to the " clinic " several times a day to have the " shots " personally administered by medical personnel. Physicians ruled out either procedure as absolutely impractical and were in accord with the long-standing policy of the American Medical Association, that

" ... Any method of treatment for narcotic drug addiction, whether private, institutional, official, or governmental, which permits the addicted person to dose himself with the habit-forming drugs placed in his hands for self-administration, is an unsatisfactory treatment of addiction, begets deception, extends the abuse of habit-forming narcotic drugs, and causes an increase in crime."

Dr. Harris Isbell, Director, Addiction Research Center, Public Health Service Hospital, Lexington, Ky., expressed his rejection of the idea in these terms :

" Suppose we did try to set up a narcotic ' bar ', and run this service. Certainly, we are not going to give the addicts the drugs to take themselves, for they might sell them. We have to have the drugs and administer them, which means that one of these narcotic bar-rooms will have to be set up at spots around the large cities; they would have to be manned 24 hours a day, 7 days a week. The addict requires drugs 4 or 5 times a day, otherwise he will become ill. Therefore, he is going to spend all of his time waiting in the so-called clinic line-up to get his drugs. In my opinion, it is an utterly unworkable thing."

3. *The plan fails to consider the " tolerance " factor, which causes the addict to demand ever-increasing doses of narcotic drugs.*

Medical authorities agree that the drug addict is dominated by the phenomenon of increasing " tolerance ". In other words, his daily intake of drugs cannot be " stabilized " or " minimized ", but must constantly be increased if he is to obtain an effect equivalent to his first " shot ". For this reason, physicians and law enforcement officials appearing before the sub-committee repeatedly warned that drug addicts could not and would not be satisfied with a minimum dose of narcotics as envisaged in the clinic proposal. They testified that under the clinic plan it would be necessary to provide the chronic addict with an ever-increasing supply of drugs. Otherwise, the drug addict would turn to illicit sources of supply.

4. *The illicit market would not be eliminated, as the tolerance factor would drive the addict to supplement his " clinic " supply from peddlers.*

The advocates of the clinic plan strongly urge that it would eliminate the illicit narcotics traffic in the United States. Dr. Hubert S. Howe, who testified on behalf of the New York Academy of Medicine, stated :

" We believe very decidedly that if you afforded all the present addicts their drug, that would, to a large extent, destroy the black-market. If you undersell them, if there is no profit at all in narcotic drugs, the black-market cannot live and thrive."

The overwhelming majority of physicians and law-enforcement officers appearing before the sub-committee disagreed with that conclusion.

One of the nation's outstanding law-enforcement officers, Sheriff Owen W. Kilday, of Bexar County, Tex., testified that he, at one time, had strongly approved of the clinics as a possible means of destroying the drug peddler's market and, ultimately, the illicit narcotics traffic. However, owing to an investigation in San Antonio which showed that a peddler had systematically enticed 40 to 50 boys and girls of high-school age to begin using narcotics, he came to the conclusion that

" . . . If you did away with a market, they would create another one and I am opposed to it all the way. I don't believe there ought to be any clinic whatsoever."

Mr. Malcolm Wilkey, United States district attorney for the Southern District of Texas, summed up the problem this way :

" You will not cut the smuggler and the peddler out because the ration these people get at the clinic must in some way be limited. It cannot be unlimited. If it is limited, these people will go to the free clinic and get their maximum supply, and then they will go out on the black-market and supplement their requirements by illegal purchases. You will still have illegal traffic to supplement the amount that can be obtained at the clinic."

Dr. G. H. Stevenson, director, drug addiction research, Department of Psychiatry, University of British Columbia, Vancouver, Canada, appearing at the special invitation of the sub-committee, testified that in his opinion legalized drugs might even increase black-market sales :

" Unless drugs were to be given to addicts in unlimited quantities to satisfy their wants rather than any need they might have, they would get their surplus from the black-market the same as they do now; and people who were going to start in to drugs, the same as young people get started in drugs now, they could not get it in a legal market, would still get it from the black-market. . . . I think the black-market would welcome legal sale as a means of increasing their own market."

Dr. Raphael Gamso, medical director of Riverside Hospital in New York, who has had experience treating hundreds of juvenile addicts, stated :

" I do not think it is practicable. . . . I am afraid that if an addict had access to free drugs he would take that and still want more."

Dr. Harris Isbell, adressing himself to the basic assumption of clinic proponents that addicts simply take drugs to feel normal and forestall withdrawal pains, said :

" The majority of addicts don't want to be normal; they want to be what they call ' high '—they want to be ' loaded '. If you provide them with drugs by this single-shot mechanism at five trips a day, that is just enough to keep the addict going and he will go out and get more so that he can get high.

" Not only would the addict fail to maintain his dosage, but his tolerance tendency would go up; indeed, the only limit to tolerance is the amount of skin available to inject, and the time required to take so many injections. Not only would the addict raise his dosage, but he would call for a variety of drugs, and all sorts of abuses would grow up. They would get their maintained doses from the so-called narcotic bars, and then they would go out and buy more on the illicit market. Such systems have been set up in various parts of the world, and it has been found always that the illicit traffic exceeds the legal traffic."

5. *The legalized distribution of free drugs would create new addicts and increase the narcotics problem in the United States.*

The stated aim of the proponents of the " clinic plan " is to eradicate narcotic addiction. As Dr. Hubert S. Howe testified :

" The objective is to stamp out drug addiction as completely as possible. The crux of these objectives is to diminish the number of individuals becoming newly addicted. The natural decrease with time in the number of existing addicts must not be over-balanced by the formation of new addicts at a more rapid rate. Indeed, if the objective of little or no addiction is to be achieved, there must be little or no formation of new addicts."

However, this suggestion that the " clinic plan " would be helpful in reducing narcotic addiction has been met with the vehement opposition of many of the nation's acknowledged experts on the treatment of drug addiction. Three of these, Dr. Victor Vogel, Dr. Harris Isbell, and Dr. Kenneth Chapman, all with first-hand experience treating thousands of drug addicts at Lexington and Fort Worth, wrote earlier :

" The proponents of this plan believe that addiction is incurable or that treatment is inhumane and that if addicts are given the minimum amounts of drugs necessary to maintain their addiction, lawlessness attendant on contraband traffic in narcotic drugs would be eliminated. This reasoning is unrealistic, as has been shown by several attempts in this country and abroad that have failed. Addicts on such ' rations ' connive to get more than their allotted amount of drugs, so that they can increase their dosage and continue to obtain a euphoric effect. They may sell or give away part of the extra supply so obtained to persons who are not addicted. This creates new addicts who are potential customers for the contraband market, and thus increases the problem which the ration plan is supposed to abolish. Furthermore, many addicts can be treated and learn to live a useful, effective life instead of one of personal neglect, indolence, and semi-somnolence which is so typical of the addict. Addiction is ' infectious ', and treatment, rather than support of addiction, is necessary to minimize its spread."

Dr. A. M. MacLeod, director, John Howard Society of Montreal, experienced in the treatment of addicts both in Canada and in England, testified that drug addiction is not spread primarily for profits, as the advocates of the clinic plan claim, but that it has the contagious qualities of a social disease. He stated :

" Without exception, every addict whom I had in treatment either attempted to give expression to or fought against a clearly recognized desire to involve non-addicts.

" Although it would be logical to assume that the reason for such proselytism is the desire to render surer a source of supply of the drug, it was my opinion that this activity was the outcome of some deeper psychological conflict, and indicated a perverse inner need of the addict to turn his self-destruction drives against those around him as well as against himself.

" Drug addicts are predominantly sociable people, and they cannot stand any degree of social isolation for very long without attempting to find a suitable companion. As a matter of medical interest, I found this desire to make converts much more pronounced in the male addicts than in the female addicts."

The sub-committee is convinced that the conclusion advanced by Dr. MacLeod is correct, for more than 95% of the addicts who appeared before the sub-committee stated that the person who first introduced them to drugs (1) gave them the drugs free of charge, and (2) never tried to sell them drugs at any subsequent time. They all claimed that they were addicted through personal contact with " friends " or " associates ".

It is apparent, therefore, that inherent in the plan for " free drugs " is the idea that the Federal Government would be maintaining in society the agent of the contagion—the drug addict himself.

6. *Successful rehabilitation of drug addicts cannot be accomplished under the " clinic plan ".*

While existing treatment programmes insist upon confining the addict in the drug-free environment of a hospital for withdrawal of the drug prior to any efforts to rehabilitate him in the community, the " clinic " proposals call for keeping the addict on drugs while trying to rehabilitate him.

(a) *Rehabilitation will fail if the addict is still using drugs*

The sub-committee finds from the overwhelming weight of authority in the field that social rehabilitation of the addict cannot succeed while he is using narcotic drugs due, in large measure, to the effect of the drug upon the individual. Testifying on this point, Dr. Robert H. Felix, Director, National Institute of Mental Health, emphasized that

" . . . It would be much more difficult to rehabilitate a person on narcotics than off . . . Because the addict, when he is on drugs, has certainly retreated from the province of reality. I feel from what I have seen over the years that this would be doomed to failure."

Dr. Stevenson told the sub-committee that, in his opinion, an individual under the influence of drugs was not a good subject for social guidance or psychiatric treatment, because

" When a person has drugs in his system, drugs are the only thing he is interested in; that is the only thing he wants. It solves all his problems, it removes his ambition, and reduces his inhibitions and moral tendencies . . . they are not as good people physically and mentally and socially when they are on drugs as when they are off drugs.

" They need increasing amounts; their mind is completely preoccupied with getting drugs when they are on drugs, and their work is, in my opinion, never as of good quality when they are using drugs as when they are not using drugs.

" The drug is an intoxicant, and it seems to me it is foolish to think that a person who is intoxicated, even in a mild degree, is as capable a person or as well adjusted a person as a person who is free from an intoxication."

Addicts who testified before the sub-committee, or who were interviewed, repeatedly emphasized that the only way to be cured of narcotic addiction is absolutely to forgo the continued use of drugs. They even scoffed at the idea that the addict could be " weaned away ", saying that " it is a matter of the addict making up his mind, once and for all ". While this is undoubtedly an over-simplification on the part of the addict, it demonstrates that even from his point of view, the first step in treatment is to give up drugs, or for them to be made unavailable through law enforcement.

(b) *Employers would not hire drug addicts as envisaged under the clinic plan*

An essential element in the plan to rehabilitate drug addicts while they are getting drugs from the clinic would be the finding of suitable regular employment. Evidence adduced during our investigation shows that one of the most difficult tasks confronting the drug addict who has returned to his home community from a federal narcotics hospital is to find an employer who will hire him, even though he has ceased using drugs and has undergone extensive treatment. It is unreasonable to expect that the long-standing distrust of addicts will change and that employers will be more inclined to hire addicts actively using drugs than at present.

As already stated, an addict should never be given a supply of drugs to carry. Therefore, it would be necessary for him to leave his job and report to the clinic 4 or 5 times a day to receive his " shots ". The employers, moreover, would undoubtedly be influenced by the fear that the addict would infect others with his drug habit and that some employees might resign their jobs and others suffer a lowering of morale.

Employment opportunities would be further limited by the fact that, as medical authorities stated, addicts co-ordinate less well and are less reliable when actively using drugs. Dr. Robett H. Felix, commenting on this point, said :

" An individual who is taking drugs is less accurate in many kinds of operations. He co-ordinates less well, without knowledge of this, for he feels that he is even more acute than he really is. So this would be another argument for me to keep the person away from drugs."

7. *" Clinics " would maintain drug addiction, as the addict who failed to respond to rehabilitation would be given " sustaining " doses for life.*

The " clinic " plan provides that the drug addict who fails to respond to rehabilitation efforts should be given, on a permanent basis, so-called " sustaining " or " maintenance " doses of narcotic drugs. This proposal for thus maintaining narcotic addiction has met with the vigorous and virtually unanimous disapproval of the medical profession. Dr. James V. Lowry, Medical Director, Public Health Service Hospital, Lexington, Ky., emphasizing that the drug addict should be treated and not kept in a state of narcotic semi-somnolence, testified :

" I think my function as a physician is to treat people, not to maintain them in a state of disease, and I think in administering narcotic drugs to a person, we cannot forget what happens to that person. It is important, particularly in people who are married, that one of the things wives tell us about the

addicted man is that he is sexually impotent and he, therefore, loses his function as a male.

" Let us take the woman. If she is addicted and physically dependent, she becomes sterile and unable to have any children. This sometimes has great significance to the husband.

" We see coming into our hospitals many addicts in whom, after they have been hospitalized a while and taken off drugs, it becomes apparent that they have such illnesses as gastric ulcers that they have not been aware of because their whole situation has been disguised by the narcotic drugs which they have been taking.

" I should also like to point out that if a person receives narcotic drugs he has every need satisfied in terms of blotting out reality. His worries are gone; his cares are gone; his responsibilities are gone.

" Now, what you are asking me as a physician is whether I want to perpetuate a condition of this kind; and I say, no. I am more interested in treating the basic condition of the individual, to restore him to health, and so my position is perfectly clear."

Each of Dr. Lowry's colleagues in the Public Health Service —and each with many years' experience in treating drug addicts—who appeared before us in New York strongly upheld the view that as doctors they could not condone dispensing drugs for the purpose merely of supporting addiction.

Dr. Robert H. Felix amplified his view in these words :

" I would not administer narcotics for the maintenance of addiction to an individual under any other circumstances except in case of painful illness for which there was no other relief.

" An addict is truly not normal without drugs. He is not normal on drugs. He is a disordered personality in either circumstance, and I have not in the years that I have worked with these people felt that the administration of narcotics to the individual improved him in any particular, as far as psychological and physical health was concerned."

The final, and perhaps most effective argument against supplying drug addicts with narcotics on a " maintenance " basis was made not by an opponent of the plan, but by one of its vigorous advocates, Dr. Herbert Berger, vice-president, New York State Medical Society, when he stated :

" A problem put off with narcotics remains unsolved. It is still there tomorrow or the next day, requiring larger and larger doses of narcotics to control. Whatever strength of character the addict may have once possessed he loses as he everlastingly retreats from the making of decisions."

8. *The " clinic " proposal would necessitate United States withdrawal from international treaties, as well as major changes in federal and state laws.*

Commissioner Harry J. Anslinger, of the Federal Bureau of Narcotics, testified that the adoption of the " clinic plan " would not only undermine enforcement and spread addiction, but would also be in absolute contradiction to responsibilities and obligations assumed by the United States in international treaties. It would, moreover, be contrary to our present leading role on the United Nations Commission on Narcotic Drugs which is designed to curb narcotic addiction and to prevent the international traffic in narcotic drugs.

In addition, the laws of all the 48 States would have to be changed accordingly if the Federal Government were to adopt the programme envisaged under the " clinic plan ". It would, therefore, be a complete turnabout in our present policies and programmes which are aimed at reducing narcotic addiction in this country to " an irreducible minimum " and, also, to stamp out the vicious narcotics traffic in this country and abroad.

9. *Experiments with similar " narcotic clinics " in the 1920's showed their abject failure.*

The sub-committee gave extensive study to the experience with somewhat similar " narcotic clinics " which were established on an experimental basis in the early 'twenties in some 44 cities in the United States. We have concluded that the clinics, as they operated at that time, were little more than " filling stations " for drug addicts, with little if any emphasis on treatment and ultimate rehabilitation.

Though drugs were sold at clinics for as little as two cents a " shot ", the problems arising from addiction did not cease. The addicts soon built up a tolerance for the amount of drugs supplied them at the clinics and resorted to fraud and trickery to secure larger doses. When addicts could not satisfy their cravings with the clinic shots, they turned to illicit sources again. Commissioner Anslinger told the sub-committee that records indicate that the illicit traffic increased after the opening of the clinics. For instance, in one year during such period, enforcement officials seized 75,000 ounces of narcotic drugs. Today, they seize about 6,000 ounces annually. On the basis of this experience, he predicted that smuggling of narcotics would triple if a clinic system were established.

The material available to the sub-committee indicates that the " clinics " attracted criminals and drug addicts from areas where no clinics existed, increasing the number of idle, delinquent, and maladjusted individuals in the cities where " clinics " were situated, and these concentrations inevitably resulted in crime waves. Prostitution and other crimes flourished in the areas immediately surrounding the clinics.

As a result of these conditions, the Committee on Narcotic Drugs of the American Medical Association wrote in their 1921 report :

> We have given the " clinic " a careful, thorough, as well as lengthy trial, and we honestly believe it is unwise to maintain it any longer.

In 1924, the house of delegates of the American Medical Association unanimously adopted the following recommendation filed by its committee on narcotic drugs :

> Your committee recommends that the American Medical Association urge both Federal and State Governments to exert their full powers and authority to put end to all manner of such so-called ambulatory methods of treatment of narcotic drug addiction, whether practiced by the private physician or by " narcotic clinic " or dispensary.

By 1925, all the clinics were closed, and the experiment had proved to be a complete failure.

It should be noted that the same failure has been experienced in all other countries which have tried the dispensing of free or cheap narcotics to addicts.

10. *The " clinic plan " undermines efforts to prevent drug addiction and raises a grave moral issue.*

Two important points remain to be considered in an evaluation of the " clinic plan ". They are : (1) whether governmental sanction of a narcotic clinic would provide drug

addiction with a source of official respectability, and (2) whether, even if the plan were entirely workable, it is morally desirable to maintain individuals on drugs in a perpetual state of disease.

With regard to the first of these points, the sub-committee is much impressed with the arguments of citizens' groups and law-enforcement officers to the effect that federal or state sponsorship of such a plan would inevitably provide narcotic addiction with a pseudo respectability which ultimately would tend to increase drug addiction in the United States. This point was forcefully presented to the sub-committee by Mr. Malcolm Wilkey, who spent more than a year studying the " clinic " proposal :

" Initially, I was considerably impressed. The scheme has a plausibility about it that is somewhat misleading. But the more I studied it and the more I looked into the results of the plan where they have tried it, the more convinced I have become that such a step would be a step backward as far as the suppression of narcotics is concerned.

" A free clinic plan would remove a very important psychological and practical deterrent to drug addiction. As conditions are now, public opinion scorns drug addicts. The average normal citizen has no contact with either drug addicts or a source of drug supply. If the average citizen suddenly decided to acquire narcotic drugs, unless he were a physician or nurse or in some way in contact with a legal supply, he would not know where to turn for an illegal source. Once we legitimize distribution of drugs to satisfy a craving for narcotics, then we will have given a stamp of legitimacy to the heinous habit. Apparently respectable citizens who are the victims of the habit now find it advisable to conceal it from their most intimate friends. If satisfying a craving for drug addiction becomes legal, becomes a topic of conversation in normal human intercourse, then many persons who have never knowingly come in contact with drug addicts would do so, and might be induced to become addicts simply by contact and example.

" I do not mean that perfectly normal human beings are likely to become drug addicts. But those human beings suffering from psychological deficiencies do frequently seek drugs to compensate for their psychological deficiencies. If these people, who can develop a psychological craving for drugs, are forced to go down in the gutter, to consort with criminals, shady characters, in disreputable portions of the city, they will be much more reluctant to initiate the drug habit than if they have the assurance that after all they can get it legally, cheaply, through a government-sponsored clinic."

The crux of the " clinic " proposal ultimately rests, not upon its practical workability, but upon the fundamental moral issue involved. The sub-committee has found that narcotic drug addiction is like a communicable disease; it has found that the use of narcotic drugs blots out reality, ambition, responsibility, reduces inhibitions and moral tendencies, and contributes to much of the nation's crime; it has found, as one of the advocates of the " clinic plan " stated, that " whatever strength of character the addict may have once possessed he loses, as he everlastingly retreats from the making of decisions"; finally, it has found that drug addiction causes men to be physically impotent and women to be sterile.

Therefore, the sub-committee believes that it would be absolutely immoral to give in to drug addiction and help perpetuate such pitiful conditions for the individual human being. We subscribe wholly to the belief that we should do everything possible to treat and rehabilitate narcotic addicts and that we should not adopt any programme to give the drug addict " sustaining " doses of narcotics which would maintain him in a state of disease.

CONCLUSION

The sub-committee is unalterably opposed to and rejects the " clinic plan " proposal for supplying narcotic addicts with free or low-cost narcotic drugs. We are opposed to all types of so-called ambulatory treatment. We believe that initial treatment must take place within a special institution, and that rehabilitation of a drug addict should not begin until after the withdrawal of narcotic drugs and he has undergone extensive physical and psychiatric treatment within an institution. We believe that attempts to reduce narcotic addiction and to destroy the illicit narcotics traffic by giving " free drugs " to narcotic addicts would be an abject failure and, more important, that it would maintain and tend to increase the present problem of drug addiction in the United States. Finally, we believe the thought of permanently maintaining drug addiction with " sustaining " doses of narcotic drugs to the addict to be utterly repugnant to the moral principles inherent in our laws and the character of our people.

The sub-committee is supported in its conclusions and policy by other groups which have given intensive study to this particular problem. Among them are :

(*a*) The Canadian Senate's Special Narcotics Investigating Committee, which reported on 20 June 1955, as follows :[4]

> The committee heard considerable evidence with respect to narcotics clinics and ambulatory treatment. The vast preponderance of responsible evidence on this subject, both oral and written, leads the committee to conclude that the establishment of such clinics or the provision of any other legalized supply of drugs for the purpose merely of supporting addiction would be a retrograde step. The committee is therefore strongly of the opinion that the narcotic drug problem cannot be solved by the creation of Government clinics where addicts could obtain their supplies.
>
> " The committee unanimously rejects any proposal designed to provide legal supplies of drugs to criminal addicts."

(*b*) The Commission on Narcotic Drugs of the United Nations, which reported at its 10th session that in the treatment of drug addiction methods of ambulatory treatment and open clinics were not advisable.

(*c*) The Committee on Drug Addiction and Narcotics of the National Academy of Sciences—National Research Council, which adopted the following policy at its 14th meeting, 1-2 October 1954 :

> The committee disapproves a policy of legalization of administration of narcotics to addicts by established clinics or suitably designated physicians because :
>
> 1. It is impossible to maintain addicts on a uniform level of dosage;
>
> 2. Ambulatory treatment of addiction is impossible and has been so judged by the American Medical Association and other informed groups;

[4] See *Bulletin on Narcotics*, Vol. VIII, No. 2.

3. The clinics would facilitate the production of new addicts by increasing drug availability; and

4. The policy is contrary to international conventions and national legislation.

II. AN APPRAISAL OF THE EXISTING TREATMENT AND REHABILITATION PROGRAMME

The Federal Government operates two world-famed narcotics hospitals—the Public Health Service hospitals at Lexington, Ky., and Fort Worth, Tex. The land, plant, and equipment of these two institutions represent a total original investment of $10,500,000, covering more than 2,000 acres. Estimated operating costs for fiscal 1957 are $5,328,100. Men and women are treated at Lexington, and men only are admitted to the Fort Worth hospital.

Many of the physicians and scientists assigned to the hospitals are internationally known, and they work with the benefit of the finest research facilities. The hospitals have pioneered in the development of methods of treatment. Here are conducted studies dealing with the nature of drug addiction and the abusive use of narcotic drugs, while other research aims at finding improved methods of treatment and rehabilitation of persons addicted to narcotic drugs. These hospitals have beds for 2,313 patients, and 1,574 are now reserved for narcotic addicts. During 1955, there were 3,638 addict-admissions, and during the 20 years the hospitals have been in operation more than 35,000 addict-patients have been admitted for treatment and psychiatric care, for a total of almost 54,000 separate admissions.

These Public Health Service hospitals, despite a shortage of psychiatrists and other professional help, are doing highly creditable jobs. They withdraw the addicts from drugs; they restore them to health physically; and they teach the addicts good work habits and train them to be self-supporting. However, if we measure success in terms of the number of permanent " cures ", these two important institutions, for reasons we discuss below, are failing to accomplish their full mission.

FINDINGS

EXISTING PROCEDURES AND FACILITIES FOR THE TREATMENT AND REHABILITATION OF DRUG ADDICTS ARE INADEQUATE AND REQUIRE SUBSTANTIAL IMPROVEMENTS.

1. *Less than 15% of the victims of drug addiction are being successfully cured today.*

Less than 15% of the thousands of addict-patients who have been treated at federal narcotics hospitals have remained free of the drugs thereafter. One out of every three addicts treated comes back for another " cure ". In fact, 40% of the admissions to Lexington and Fort Worth are repeaters. This rate of relapse is one of the most discouraging aspects of treatment. Addict after addict testified before our subcommittee that they had returned to the use of drugs within a month or even the day after their release from Lexington and Fort Worth, although they spoke highly of the method of treatment at the hospitals. Even federal officials in charge of the hospitals agree that cures, in the strict medical sense, are presently impossible for the vast majority of drug addicts. With young people this is especially tragic, for it means a lifetime of slavish addiction to drugs, criminal activities to support themselves and their habit, and spreading their addiction to others. This failure cannot be attributed to the treatment methods within the institution. Rather, it is the result of two main weaknesses : first, poor admission procedures, which permit voluntary patients to come and go at will, and second, the utter lack of community follow-through programmes to receive the addict-patient upon his discharge.

2. *75% of the drug addicts who volunteer for treatment in federal narcotics hospitals demand to leave before they fully benefit from medical and psychiatric treatment.*

Voluntary patients account for two-thirds of the admissions to federal narcotics hospitals. Only 25% of these remain for the recommended minimum period of 4½ months. Of the 75% who do not stay for the minimum period of treatment, 50% leave in less than 30 days. Only the one-third admitted under court orders are required to remain the full time prescribed by the hospital staffs.

Commenting on this abnormally high rate of turnover, Dr. Harris Isbell, Director of Research, Public Health Service Hospital, Lexington, Ky., testified :

" Drug addicts frequently come to the hospital for a very superficial reason. Some of them may come there because they are mad at a peddler who suddenly raised his prices; that is their only reason for coming. Others may come simply to get the degree of addiction reduced to where their habits [do not cost so much]. Many of them come under pressure from their families, not really of their own will, their own wish, and accord.

" Addicts are a group who, even in treatment, will vacillate. They are very changeable and immature people. One day they may be really desiring to get away from addiction. This frame of mind may last for a matter of days or weeks, then they will have a change of mind."

Many addicts have been in and out of our federal narcotics hospitals as high as twenty and some as high as thirty times, although never staying long enough at any one time to be " cured " of drug addiction. The result is a " revolving door " type of operation which is expensive for the hospitals, and of very little benefit to the addict-patient and the community.

3. *Voluntary admission is a loose, hodge-podge procedure, without federal or state control or supervision.*

Because of the voluntary system of admissions, the federal narcotics hospitals are processing, and often re-processing, a continuous stream of drug addicts. Their addiction to narcotic drugs and their stay at the Federal hospitals are confidential.[5] In most instances, state authorities do not know the addicts are under treatment, and the federal authorities are prohibited by law from telling them. This prohibition applies not only to disclosing their names to appropriate agencies, but it applies also to clinical data which might otherwise be forwarded to community social and welfare agencies to help the addict when he returns home. The Federal Government has no follow-up facility for rehabilitation, and the effect of the law is that it even prevents the hospital authorities from advising and working with state and municipal agencies in order that a discharged addict-patient might receive every opportunity for rehabilitation and, in the event of relapse, that he might be promptly re-committed.

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[5] Public Health Service Act (42 U.S.C., 260(d)): "... and the record of his voluntary commitment shall be confidential and shall not be divulged ".

Hospital authorities told the sub-committee that, because of the law, they do not know what happens to two out of three discharged addict-patients. They are released upon their own demand to descend upon an unsuspecting community like carriers of a contagious disease, except that these individuals also plague the community with crime to support themselves and, inevitably, their recurring narcotic addiction.

4. *State and local treatment facilities are meagre, and state courts lack authority to commit drug addicts directly to federal narcotics hospitals.*

It is a regrettable weakness in the federal programme that permits an individual addict from any city or State to volunteer for treatment and leave as he wishes, and yet denies to state courts the authority to commit an addict to the Public Health Service hospitals, even on a reimbursable basis. This is particularly significant when we recognize that State and local treatment facilities are extremely meagre.

Because of the enormous capital investment which would be required to establish suitable treatment facilities, only one State—New York—has been able to assign a hospital solely to the treatment of drug addiction. It is available, however, only to addicts under twenty-one.

New Jersey has a special narcotics commission working on a new set of laws and regulations making it possible for drug addicts to receive treatment in the state hospital system. Los Angeles County in California also has a plan in process of development which would provide treatment in county hospitals. Measures to permit treatment in state institutions are under consideration in California and Ohio.

Because of the limited state narcotics hospital facilities and, also, because of the abuses inherent in the voluntary type admission in the federal hospitals, many federal and state authorities told the sub-committee that it was a matter of urgency that the Surgeon-General be authorized to accept in federal narcotics hospitals drug addicts committed for treatment by state courts. We were cautioned, at the same time, that all efforts to cure drug addiction without long-term supervision have met with consistent failure and that, consequently, state commitment authority must depend upon establishment of local rehabilitation programmes.

Attorney-General Jacob K. Javits, of New York, chairman of the committee on narcotics of the National Association of Attorneys-General, made several constructive proposals to the sub-committee regarding treatment and rehabilitation, and presented the following resolution by the National Association of Attorneys-General which was adopted at its meeting at Bretton Woods, September 1955 :

NARCOTIC DRUGS

Whereas this association, by appropriate resolutions adopted at its annual meetings in 1952, 1953, and 1954, established a committee on narcotic drug control, which has sought to advance the care, treatment, and rehabilitation of narcotic drug addicts, and has urged the enactment by the Congress of legislation to permit the institutionalizing of such addicts in appropriate Federal hospitals upon commitment thereto by courts of competent jurisdiction of the States and other measures;

Now, therefore, be it resolved by the 49th annual meeting of the National Association of Attorneys-General :

1. Supports the enactment of legislation by the Congress now contained in the Payne bill, Senate Joint Resolution 19, to permit narcotic addicts committed from the States to be treated in the special United States Public Health hospitals, subject to reimbursement for the care cost, and urges its members to work for such enactment.

2. Supports the development of a permanent national narcotics policy and urges a national review conference to be called under the auspices of the Federal Government to consider means for the co-ordination of existing Federal and State narcotics laws and procedures, stricter enforcement of laws dealing with the narcotics traffic, and the establishment of a programme of research into the causes and cure of narcotic addiction through the National Institutes of Health, with the aid of a national council.

5. *Community follow-up, or rehabilitation facilities and services for the discharged addict-patient are virtually non-existent.*

A major weakness in current efforts to treat and rehabilitate drug addicts is the almost complete lack of follow-up or post-hospitalization facilities on the community level to check upon and aid the addict once he leaves the federal narcotics hospital. The Federal Government does not and should not take the initiative in following through hospital care by providing the addict with rehabilitation services after he has returned to his home community. This is an area which properly calls for action by state and local governments, but it is also one in which inaction can completely nullify federal efforts. Emphasizing the vital importance of community follow-up, Dr. Raphael R. Gamso, medical superintendent of Riverside Hospital for juvenile addicts in New York City, said :

" The period in the hospital is a very important period, but the period after return to the community is equally important, probably more so, because when a person leaves the hospital he is again subjected to the same forces which caused him to use drugs, and if we cannot protect him from those forces and help him to sustain himself, he has lost the benefit of hospital care."

The situation as it was described to us by medical authorities, enforcement officials, probation officers, and even the addicts themselves, can be summarized as one of rejection and abandonment by the home community. This is not solely because they have been drug addicts, but because inevitably most of them have criminal records, and according to law enforcement opinion and statistics, a majority of today's addict population became involved in law violations prior to addiction.

Some of the specific difficulties encountered by returned addicts in New York City and outlined in a special report prepared for the sub-committee by Mr. Morris Kuznesof, United States probation officer, Southern District of New York, are typical of many of the problems described to the sub-committee in cities throughout the country :

" Because, as a rule, the public abhors the addict, his problems of adjustment are greater after he returns from the hospital than are other prisoners' released from jail. In the first place, he cannot let a prospective employer know where he has been, or that he is a former user, as addicts are considered to be very undependable, unreliable workers. To add to his difficulties, the New York State Employment Service will not refer any adult individual who has a history of narcotics use, presumably for the same reasons.

" The returned addict requires a good deal of help immediately after his arrival. If he does not have a sympathetic family, which can supply his needs, he must turn to social

agencies for help. Private casework agencies have religiously refused to assist former addicts. Local psychiatrists have also refused to accept the cases of addicts, even though they were able to pay the fee."

As long as State and local communities thus fail to provide even the minimum after-care programmes, the vast expenditure of funds and energy at our federal narcotics hospitals will be virtually wasted. Dr. G. Halsey Hunt, Assistant Surgeon-General, USPHS, in his testimony before the subcommittee stated :

" It is our increasingly overpowering feeling that hospital care is only the first step, and that the local communities to which the patients return after they leave the hospital must, if treatment is to be successful in any appreciable number of patients, pick up the ball and provide facilities for rehabilitation of the individual in his home environment."

That the failure of the local communities to provide suitable follow-through procedures and facilities is mainly responsible for the narrow success of Lexington and Fort Worth in obtaining permanent cures, is pointed up in the testimony of Dr. Harris Isbell, Director of the Addiction Research Center at Lexington :

" The main weakness we suffer from is the lack of follow-up treatment. A man may come to us and stay for 4½ months, and a lot of money is spent on him; he then goes back to his local community and leaves our jurisdiction. It is hardly appropriate for the Federal Government to go into those cities and set up follow-through facilities and agencies to aid the addict.

" A man can go through a period of institutional care and leave with all the best intentions in the world, returning to his community to find there is nothing there for him. He cannot get a job, and he has no resources, he has nothing. He goes to the social agencies and finds that they are already tremendously overburdened with many other problems. They are afraid of the addict and will do nothing for him and, in order to eat, that man almost immediately has to drop back into some kind of criminal activity. But the minute he goes back into criminal activity, he is going to head back to drugs. A person going home after a period of institutionalization . . . needs a great deal of help, support, supervision, which is, I think, properly the responsibility of the community."

Only two communities—Chicago and Detroit—offer rehabilitation services on a local basis.[6]

Both of these agencies attempt to help the former addict adjust to a normal drug-free life in the community by providing a variety of services. For example, workers help the ex-addict find a job, give him financial assistance to tide him over until he gets a job, and encourage him to talk over his emotional problems with professionally trained members of the staff in an effort to better understand himself and prevent relapse. The Detroit clinic, with two full-time employees and the part-time assistance of a psychiatrist, is unable at the present time to offer the comprehensive services originally envisioned for the clinic. Its main contribution so far has been in the identification of addicts for hospital treatment.

Experience at these two clinics has already indicated that this phase of treatment, like the hospital phase, must contain a strong element of coercion to bolster the addict's resolve to stay off drugs. Dr. Walter A. Adams, director of the Chicago clinic, in a statement prepared for the Committee, indicated that almost all of the addicts who come to his clinic are poorly motivated to persist in the long-term efforts required for successful rehabilitation. Dr. Raphael Gamso recommended not only that comprehensive after-care services be made compulsory for released addict patients, but also that such services be thought of as a five or six year programme for each patient.

Federal law may have contributed, at least in some degree, to the failure of the States and local communities to adopt programmes to aid the discharged addict, for as we have stated, even if adequate facilities and services were available at the present time, federal hospital authorities would be absolutely prohibited by law from forwarding the names and related clinical data to such community agencies. The confidential nature of the hospital records, therefore, actually may have prevented local communities' access to the very information essential to them in determining the extent of the problem and, of course, the necessity for follow-through facilities.

6. *No facilities exist for isolating the chronic or " incurable " drug addict.*

Medical authorities and law enforcement officers repeatedly warned of the existence of a " hard core " of chronic or " incurable " narcotic addicts who were neither susceptible to treatment nor isolated to prevent the spreading of drug addiction. Dr. Kenneth Chapman, consultant, Narcotic Drug Addiction, Community Services Branch, National Institute of Mental Health, in his testimony before the subcommittee, stated :

" There is a hard core, and this is the group we hear about repeatedly, who cause the general feeling that drug addiction is incurable. It is those people we continually see, those people who are continually in the hands of the police, who are continually in the hospital, are continually seeking drugs. This hard core are the ones we see all the time; they are the ones who cast doubt on the possibility of any successful treatment."

Despite this knowledge—that chronic addicts are not amenable to cure, that they infect others with drug addiction, that they habitually engage in crime, and that, thus, they are a menace to society—neither the Federal nor State Governments has met the threat with special facilities for the isolation or quarantine, of these individuals. The danger of the situation is pointed up in testimony by Dr. Isbell, when he says :

" A chronic, relapsing addict with a long record might be taken in just for withdrawal of drugs; if we feel we can do nothing for him we will just take him in for two weeks or thirty days, after which we will discharge him again."

The pattern is endless, and so is the cost in terms of crime, taxpayer dollars, and human havoc. These incurable addicts who have in reality lost their power of self-control and who are dangerous to the health and welfare of the community not only are habitual criminals but also spread their addiction to others, much on the same order as persons with contagious diseases. Experts agree, therefore, that both in his interest and in the interest of community protection, the chronic drug addict must be " quarantined " or otherwise confined

[6] New York City has an after-care clinic which is an adjunct of Riverside Hospital and therefore available only to juvenile addicts who have received treatment at Riverside. The Public Health Service also has a pilot follow-up clinic located in New York City; but it is oriented primarily towards gathering information and is staffed by two social workers.

for long periods of time or permanently if relapses continue after releases from isolation or confinement.

RECOMMENDATIONS

1. That voluntary commitments to the Federal narcotics hospitals be abolished, and that all admissions be processed through the appropriate district court of the United States for civil type commitment requiring a mandatory period of treatment, or by state court commitments under the conditions hereinafter outlined.

2. That the Surgeon-General be authorized to accept addicts committed by a State on a reimbursable basis under state court orders requiring a mandatory period of treatment.

3. That each State be assigned a quota of addict-patients which may be committed to federal narcotics hospitals at any one time, therefore assuring that each State has fair and equal opportunity to avail itself of the limited facilities. In those few States where the number of addicts requiring treatment exceeds the established quota of patients at Lexington and Fort Worth, such States should assume the responsibility of establishing their own special hospital facilities for the treatment of drug addiction.

4. That States desiring to participate in the commitment programme, in order to become eligible, must have satisfied the Surgeon-General that suitable follow-through or post-hospitalization facilities have been established to aid and assist the drug addict upon his discharge from the federal narcotics hospital and to determine any relapse to addiction. That the USPHS continue to provide technical and advisory assistance to States and local communities in developing follow-up programmes.

5. That, for a successful follow-through programme, commitment orders for drug addicts should provide for at least a three-year probation status upon release from federal hospitals, including mandatory provisions for regular reporting and physical examinations, and for re-commitment upon relapse without the institution of new proceedings.

6. That no drug addict be treated at federal narcotics hospitals on more than three occasions, after which, if found to have relapsed again to the use of drugs, he should be subject to state or federal proceedings designating him as an habitual narcotic addict and committing him to an indeterminate quarantine type of confinement at a suitable narcotics farm which, it is recommended, should be established with joint Federal-State planning and financing, such arrangement to include either :

(*a*) individual States, or

(*b*) a group of States entering into a compact for such purpose.

7. That the Public Health Service Act be amended to authorize the divulgence of information relating to narcotic addicts to appropriate federal and state authorities in charge of treatment and rehabilitation programmes and to the Federal Bureau of Narcotics.

8. That the Surgeon-General continue and expand, where needed, the existing federal research programme into the causes, treatment, and rehabilitation of drug addicts, and that annual reports on the progress of such research be made to the appropriate committees of the Congress.

It should be noted that these recommendations for treatment and rehabilitation are not intended as a substitute for criminal confinement and punishment of those addicts who are convicted of law violations. They should pay their debt to society the same as non-addicts, and proper law enforcement and confinement in such instances will do much toward minimizing the narcotics traffic and addiction in the United States.

Illicit traffic in narcotics, barbiturates and amphetamines in the United States

Report to the Committee on Ways and Means of the House of Representatives of the Congress of the United States of America from the Sub-Committee on Narcotics

The Committee on Ways and Means of the House of Representatives of the Congress of the United States of America directed at the close of the first session of the 84th Congress the appointment of a sub-committee for the purpose of making an investigation and study of illicit trafficking in narcotics, barbiturates and amphetamines in the United States, with particular attention to be paid to a study of the effect of the so-called Boggs law, Public Law 255 of the 82nd Congress, on the illicit narcotics traffic.[1]

The report of the sub-committee is based on a study conducted in the main for fifteen days of public hearings in Washington, D.C.; Lexington, Ky.; New York, San Francisco, Seattle, and Chicago.

The editors of the *Bulletin* present herewith *in extenso* some chapters of this report, other chapters having been omitted because they would overlap with what has been published of the Report of the Committee on the Judiciary of the United States Senate, which is given *supra*, or with the Report of the Interdepartmental Committee on Narcotics to the President of the United States which was published in Volume VIII, No. 2 of the *Bulletin*, *q.v.*, for instance, the chapters : Background information relating to the drug problem, the parts on drug addiction, legislation, enforcement, hospitalization and rehabilitation, international control.

MAJOR FINDINGS OF THE SUB-COMMITTEE

Narcotics[2]

With respect to narcotics, the sub-committee is convinced that the Boggs law providing for minimum mandatory sentences has brought about a considerable improvement in the fight to stamp out the illicit trafficking. Prior to the enactment of the Boggs law, the average sentence for violations of the narcotics laws was 18 months. At the present time, the average sentence is 43 months. The evidence which we obtained, however, also indicates that about 80% of narcotics convictions now are of first offenders. Although present law now imposes a minimum mandatory sentence on a first offender of at least two years and up to five years, it also permits probation or suspension of sentence in the case of the first offender. This possibility of suspension or probation for the first offender has resulted in the big-time operators who have previous narcotics convictions remaining in the background. They operate through anti-socially inclined persons who have never been convicted of a violation of the narcotics laws and who are willing to risk apprehension, particularly in those areas of the country where the judges are inclined to impose minimum or suspended sentences and where probation is easily obtained.

The sub-committee has concluded that not only should probation and suspension be removed in the case of the first-offender trafficker but also the maximum sentence should be increased from five to twenty years. Enforcement officers have reported certain weaknesses in present laws and have called the attention of the sub-committee to certain court decisions which have tended to vitiate the effectiveness of existing federal enforcement legislation. It is the sub-committee's view that corrective legislation should be enacted to restore the effectiveness of these laws. Such statutory changes relate primarily to procedures and technicalities rather than to matters of substance.

Barbiturates

With respect to barbiturates, the sub-committee has found that there is not only a lack of realization of the seriousness of the consequences and possibilities of abuses on the part of the public, but also on the part of the medical profession and others who are concerned with their manufacture and distribution. Barbiturate abuse has become a serious social problem. Although federal, state, and local officials charged with the responsibility for enforcing present laws relating to barbiturates are aware of the seriousness of these problems, they are not only operating under the handicap of insufficient funds and shortage of enforcement personnel, but also are further handicapped by a lack of legislative authority for proper enforcement. There is divided opinion among medical experts as to the addictive and habit-forming potentialities of barbiturates. Some contend that barbiturates are just as addictive as are narcotics; others claim that they are not addictive but are habit forming. In any event, all agree that they can be abused.

Generally speaking, the medical profession and enforcement officials oppose the recommendation that barbiturates should be subjected to the same control as that which now applies to narcotics. Owing to the nature of the supply and use of these drugs, the sub-committee is of the opinion also that barbiturates should not be subjected to the same type of control as now applies to narcotics. Barbiturates are domestically produced. On the other hand, the natural sources of narcotics are almost exclusively foreign. This means that they must be imported before they can enter illegal channels. In the light of this, the sub-committee recommends that federal regulation of barbiturates should be on the basis of the power of Congress to regulate inter-state commerce rather than through the device of regulatory taxes.

Amphetamines

With respect to amphetamines, the sub-committee found that medical experts and enforcement officials are in general

[1] This law provided for, *inter alia*, minimum mandatory sentences for violators of the narcotics laws. [Editor's note].

[2] General references to narcotics in this report include within the term marihuana, which is similarly treated with respect to penalties, etc.

agreement that amphetamines are not addictive. However, it was also generally agreed that amphetamines are equally as subject to abuse as are barbiturates and that their improper use results in anti-social behaviour to the detriment of society. Amphetamines are now classified under the Food, Drug and Cosmetics Act along with barbiturates as dangerous drugs.

The sub-committee believes that amphetamines should be regulated by the Federal Government in the same manner as barbiturates. It is also recommended that persons who have not secured these drugs through authorized channels be subjected to penalties for illegal possession.

Barbiturates and amphetamines, like most narcotics, have a proper and valuable place in certain medical treatment. At the same time barbiturates and amphetamines are also like narcotics in that, owing to the very properties which make them not only useful but essential to the medical profession, they are subject to abuse by emotionally unstable persons. It is not their use which concerns the sub-committee; it is their misuse. These drugs are at one and the same time a blessing and an evil. When used properly under medical direction, they are effective in the alleviation of illness and suffering. When used in strict conformity with medical prescription and not for sensual gratification, barbiturates and amphetamines represent an outstanding pharmaceutical advancement. The therapeutic administration of these drugs produces results that are beneficial with respect to many human maladies. A patient may use them with confidence within the limits prescribed by his attending physician. When misused, barbiturates and amphetamines, like narcotics, become a social and legal problem which is of grave public concern.

The details of the sub-committee's recommendations and the reasons for them are set forth in subsequent parts of this report.

BASIC PROBLEMS COMMON TO NARCOTICS, BARBITURATES, AND AMPHETAMINES

There is an interrelation between addiction to narcotics and the abuse of barbiturates and amphetamines. All persons abusing and misusing any one or a combination of these drugs, with few exceptions, are not normal persons in that they are suffering from some basic psychological or mental disorder. This means that efforts at prevention and rehabilitation and treatment of these persons must proceed basically along the same lines in each case. The problems of enforcement and legislation are similar in the case of each of these drugs to the extent of the type of individuals involved. The social problems involved are basically the same. Generally speaking, there is a lack of public awareness as to the seriousness of abuse of these drugs. There is a serious lack of statistics on the abuse of barbiturates and amphetamines. This statistical lack stems from the fact that these drugs are of relatively recent development and their distribution and use have not been subject to the rigid controls applicable to narcotics. In the case of narcotics, statistics are more reliable. However, estimates of the number of narcotic addicts vary considerably.

NARCOTICS

Penalties

Effective control of the vicious narcotic traffic requires not only vigorous enforcement but also certainty of punishment. Conclusive evidence was presented during the sub-committee's investigation that the imposition of heavier penalties was the strongest deterrent to narcotic addiction and narcotic traffic. In those areas of the country where we found leniency in sentencing the prevailing practice, drug addiction and narcotic traffic without exception are on the increase. Also without exception, wherever heavier penalties are imposed by the courts, narcotic traffic and addiction are at a virtual minimum or non-existent.

The enactment of Public Law 255—the so-called Boggs law—in 1951 has been largely responsible for turning the rising tide of the narcotic traffic and of narcotic addiction. The Boggs law for the first time imposed minimum mandatory penalties for violations of the narcotic laws. It provides a penalty of not less than two years nor more than five years for a first offence; not less than five years nor more than ten years for a second offence; and for a third or subsequent offence, not less than ten years nor more than twenty years. For second or subsequent offences it prohibits probation or suspension of sentence.

Before the enactment of this law, the average sentence for a violation of the narcotics laws was eighteen months. The average sentence now is approximately forty-three months. However, it must be recognized that special incentives in our penal systems serve to decrease the actual time spent in a penal institution under a sentence imposed by the court. The violator is eligible for parole after serving one-third of his sentence. As is true of all Federal law violators, he is subject to conditional release after serving two-thirds of his sentence. Available data from the Bureau of Prisons indicate that a violator of the narcotics laws actually serves an average of less than two-thirds of the sentence imposed by the court. This tends to defeat the purposes of the act and should be corrected as set forth in the sub-committee's recommendations.

The committee is convinced that the Boggs law in its present form has contributed greatly to the control of the narcotic traffic. As a result of our investigation we urge that it be strengthened to combat more effectively drug addiction and illicit drug traffic. We have adduced substantial evidence that because of the severe penalties on repeating offenders and the fact that suspension and probation are not available in the case of an individual with a record of prior narcotics convictions there has been an increase in first offender traffickers. Repeating offenders subject to the heavier mandatory penalties under the Boggs law have moved into the background and recruited young hoodlums as peddlers in the narcotic traffic. These recruits are subject to the minimum mandatory sentence of two years with the possibility of suspension or probation. At the present time, 80% of the violators of the narcotics laws apprehended and convicted are first offenders under the narcotics laws. The majority of these individuals have prior records of crime. However, because they have no prior conviction for violations of the narcotics laws, under the Boggs law they are considered as first offenders. With the possibility of receiving probation or a suspended sentence, these unscrupulous individuals are willing to risk apprehension for the fantastic profits derived from this type of crime. The mark-up in heroin sold to addicts in this country runs up to 10,000% over its cost at the source.

Unless immediate action is taken to prohibit probation or suspension of sentence, it is the sub-committee's considered opinion that the first-offender peddler problem will become progressively worse and eventually lead to the large-scale recruiting of our youth by the upper echelon of traffickers. The penalties on peddlers with or without a record of prior

convictions under our narcotics law must be made sufficiently severe to make the profits from this insidious commerce an inadequate inducement to assume the risks involved.

The narcotic traffic has been aptly described as " murder on the instalment plan ". The peddler or trafficker who is a killer on the " instalment plan " of the weaker persons in our society, including our youth, should be dealt with severely or he will continue to encourage and exploit for financial gain the demands of a wretched human weakness.

Some testimony was received by the sub-committee to the effect that in determining the degree of punishment a distinction should be made between the non-addict trafficker and the addict trafficker with the latter group being dealt with less severely. It is the view of the sub-committee that the addict trafficker is just as vicious a person as the non-addict trafficker, that his deeds are made no less heinous by virtue of his addiction, and any attempt to place such individuals in a separate category with a view to dealing less severely with them would only serve to encourage the addict trafficker to the detriment of society.

It is urged by the sub-committee that the minimum and maximum penalties applicable to convictions for violations of the narcotics laws be increased on both the federal and state levels. The importance of heavy mandatory type penalties in narcotics cases at the federal and state levels was clearly demonstrated during the sub-committee hearings and investigation. It is recommended that the convicted narcotic peddler be sentenced to not less than five years for a first offence, and not less than ten years for a second or subsequent offence. Maximum sentences should be increased to twenty years and forty years respectively, for first offences and for second and subsequent offences in the case of the narcotics peddler.

The sub-committee is not recommending an increase in the minimum sentence of two years applicable to first offender possessors. It is recommended, however, that the maximum penalties applicable to such possessors be increased from five years to ten years. This will permit the exercise of a wider latitude of discretion as warranted by the existing facts in a specific case without unduly weakening the penalty deterrents to illegal narcotics possession. A further recommendation of the sub-committee is that probation and suspension of sentence be prohibited for all first offender traffickers.

In the case of an adult peddler abetting a juvenile in the use of narcotics, a minimum mandatory sentence of ten years with a maximum sentence of forty years should be prescribed without opportunity for suspension or probation. The sub-committee recommends that the maximum fine be made $20,000, applicable for any narcotics violation, and that its imposition be made discretionary with the court. The sub-committee realizes that it is impossible through legislation to instil character where human weakness exists. However, it is believed to be incumbent upon the Congress and the state legislatures to see to it that this reprehensible preying upon human weaknesses is most severely punished.

Education

The sub-committee is convinced that the public generally does not fully understand the viciousness of drug addiction nor the seriousness of the proportions of this addiction. Recommendations were presented during the public hearings that an educational programme be instituted in the schools to make students aware of the evils of narcotics. However, careful consideration by the sub-committee of the efficacy of such an educational programme has led to the conclusion that it would tend to arouse undue curiosity on the part of the impressionable youth of our nation unless undertaken with extreme caution. Many young persons, once their curiosity is aroused, may ignore the warnings and experiment upon themselves with disastrous consequences.

The sub-committee is therefore opposed to direct routine education of our youth and we are supported in our views by the United Nations Commission on Narcotic Drugs and by Narcotics Commissioner Harry J. Anslinger, who are against any such educational programme. It is urged that medical groups and others who are in positions of responsibility dealing with drug addiction make every effort to bring to public light the viciousness of this addiction. It is believed that the availability of authoritative information as distinguished from a formal educational programme will accomplish the necessary public awareness without stimulating juvenile curiosity. An aroused and informed public, in this case as in all other problems of national concern, is the major factor in effectively dealing with the problem.

Recommendations

Although substantial progress has been made in controlling the illicit narcotics traffic in the United States, drug addiction remains one of our most serious social problems. To combat this situation effectively, we must have a programme based on vigorous enforcement, strengthened legislation, severe penalties, compulsory hospitalization, and improved rehabilitation.

With these objectives in mind, the sub-committee makes the following recommendations to the Committee on Ways and Means for a more effective control of the vicious illicit narcotic traffic. It is the sub-committee's hope that the States will review their responsibilities in this problem of controlling narcotic addiction and where necessary take appropriate action :

1. Penalties for violations of the narcotics laws should be mandatory in all States.

2. The minimum and maximum penalties should be increased for all violations of the narcotics laws, both federal and state, with parole eliminated.

3. Present penalties for traffickers in narcotics under the Boggs law should be increased to not less than five years for the first offence and not less than ten years for second and subsequent offences, with probation and suspension of sentences prohibited.

4. Increased penalties should be provided for the sale of narcotics by adults to minors.

5. The Congress should adopt a resolution urging all nations to ratify, as soon as possible, the 1953 Protocol which would limit world-wide production of opium.

6. The Congress should adopt a resolution urging that the Division of Narcotic Drugs of the United Nations, recently moved to Geneva, Switzerland, be relocated at the United Nations Headquarters in New York.

7. The Congress should adopt a resolution urging the United Nations to expedite the final drafting of the proposed single convention, which would modernize, codify, and replace existing conventions and protocols on narcotics.

8. The authorized personnel of the Federal Bureau of Narcotics should be increased to a minimum of 400 agents and sufficient appropriations should be authorized at the earliest possible time to provide for this increase in personnel and to furnish the Bureau with sufficient funds for effective operation here and abroad.

9. The Bureau of Customs should be provided with additional appropriations to permit an increase in their enforcement personnel to cope with the smuggling problem.

10. The Department of the Treasury should expedite the study and preparation of legislative recommendations to authorize the Commissioner of Narcotics to license manufacturers of natural and synthetic narcotic drugs, fix quotas to control production, and regulate their distribution.

11. Defects in the laws applicable to marihuana relating to illegal possession, transportation, and smuggling of marihuana should be corrected. Venue should be permitted in the State where a violator is apprehended.

12. Smuggling of marihuana should be made subject to more severe penalties.

13. Consideration by the Congress should be given to amending the Public Health Service Act, Public Law 410, 78th Congress, so as to permit the Surgeon-General of the Public Health Service to disclose information on voluntary patients so as to aid in follow-up care programmes for addicts.

14. Legislation should be enacted to authorize, under a court order, the interception and admission of evidence of telephone communications in narcotics cases.

15. The Federal Government should have the authority to grant immunity from prosecution to witnesses in narcotics cases.

16. The Federal Guvernment should authorize for a limited period of time state commitments to federal narcotics hospitals on a reimbursable basis.

17. Legislation should be enacted to permit searches and seizures in narcotics cases taking into account the viciousness of illicit traffic and the peculiar nature of the evidence involved.

18. Legislation should be enacted authorizing the Federal Government to appeal a decision or judgment of federal district courts where evidence is suppressed on the basis of questions as to search and seizure.

19. Federal narcotic agents should be given statutory authority to carry firearms, execute and serve arrest warrants, and make arrests without warrants for narcotics law violations.

20. The States should be urged to provide suitable legislation for the commitment of addicts for treatment.

21. State and local governments should be urged to provide adequate enforcement personnel to combat narcotic addiction and the illicit traffic on these levels.

22. It is urged that the States and local communities establish a programme for the follow up treatment of addicts and provide hospital facilities for treating addicts where warranted by the rate of addiction.

23. States should be urged to amend their narcotics laws to cope with the problem of the new synthetic narcotic drugs.

24. Those States without adequate narcotics legislation should be urged to adopt the Uniform Narcotic Drug Act.

25. All States should be urged to adopt an addict law similar to the one now in operation in New Jersey and to provide heavier mandatory type penalties for all violations of the narcotics laws.

26. The Federal Government, through its qualified agencies, should assist States and the local governments in the establishment of adequate programmes of narcotics law enforcement, treatment and rehabilitation.

27. Research should be continued and expanded on both the federal and the state level into the causation and prevention of addiction as well as its treatment.

28. The Boggs law should be made applicable to the District of Columbia.

29. The penalties of the Boggs law should be broadened to cover drugs found on a vessel.

30. Stricter laws should be enacted governing the entrance and egress of airplanes to and from Mexico and Canada.

31. Legislation recommended by the Commissioner of Immigration and Naturalization for the expedition of the deportation of alien narcotics law violators should be given early consideration by the Congress.

32. Consideration should be given to means for achieving increased public awareness of the evils of the illicit traffic in narcotics by the federal, state, and local governments. Caution should be used to see that any programme is devoid of sensationalism and over-dramatization.

Barbiturates and amphetamines

Traffic

Although narcotic addiction has been a problem in the United States for over a century, the abuse of barbiturates and amphetamines is of recent origin. Evidence received by the sub-committee indicates that the illicit traffic in these drugs is endangering the health and welfare of our citizens and presents a problem that has increased in seriousness during recent years.

The beneficial medical uses of barbiturates and amphetamines cannot be challenged and their legitimate utilization under proper guidance of, or prescription from, a physician is a desirable consequence of our medical and pharmaceutical progress. Barbiturates and amphetamines constitute effective drugs for the medical profession to use in the treatment and alleviation of many human illnesses and disorders. The sub-committee is cognizant of the benefits to be derived from the proper uses of barbiturates and amphetamines but we are also aware of, and concerned with, abuses and problems arising from their improper uses.

Unlike the narcotic traffic, which is concentrated in our larger metropolitan areas, the illicit traffic in barbiturates and amphetamines attacks both large and small communities. The traffickers are individuals operating independently of any underworld organization. According to authoritative sources, the places of illicit distribution are many and varied, such as roadside taverns, service stations, houses of ill repute, bars, hotels, restaurants, retail drugstores, and unscrupulous physicians.

The domestic production of barbiturates during the past fifteen years has been tremendous. In 1954 manufacturers produced 798,000 pounds of barbiturates. This is equal to approximately 3 billion 1½-grain capsules, or enough to provide 18 doses for every man, woman and child in the United States.

More than 1,500 different barbiturates have been synthesized; however, less than 20 are important to medicine.

At the present time approximately 1,330 pharmaceutical firms in the United States manufacture barbiturates under various trade names.

While the source of illicit narcotic drugs is of foreign origin, the barbiturates and amphetamines in the illicit traffic originate from legitimate domestic sources. In the sub-committee's opinion, the diversion from legitimate channels has created a need for controlling the domestic production and distribution of these drugs.

The illicit traffic in barbiturates and amphetamines has been encouraged by a lack of proper control of inter-state shipments of these drugs. Large quantities have been diverted into illicit channels as the result of inter-state shipments from manufacturers and wholesalers to unauthorized individuals. Mail-order-house distribution also presents a problem, as well as the promiscuous refilling of prescriptions for barbiturates and amphetamines when the distribution is not in conformity with a medical prescription and the use is not under the supervision of a physician. Although the representative of one mail-order house testified before the committee that his company employs qualified physicians to prescribe barbiturates, lack of individual supervision and proper control may possibly create an avenue for some diversion and abuse through such an outlet.

Dependence

Differences of opinion exist among the foremost medical authorities as to the extent of barbiturate and amphetamine abuse, but all agree they are dangerous drugs and their misuse presents a serious public health problem.

Evidence presented to the sub-committee indicated that the abuse of these drugs leads to abnormal and anti-social behaviour, and to the commission of crimes, especially those of a sexual nature.

Barbiturates act as a depressant, while amphetamines act as a stimulant. Authorities agree that both are at least habit-forming. Some authorities, including Dr. Harris Isbell, of the United States Public Health Service, refer to chronic barbiturate intoxication as barbiturate addiction.

In 1940 the American Medical Association conducted a survey and found the incidence of barbiturate addiction to be one in 15,000 hospital admissions. Although some authorities allege that addiction to barbiturates is now more widespread than narcotic addiction, no reliable statistics concerning the current misuse of the barbiturate and amphetamine drugs are available.

Research studies at the United States Public Health Service Hospital at Lexington, Ky., indicate that the physical effects of barbiturate addiction are more serious than those of narcotic addiction. Those addicted are harder to treat, and the effects on the individual are more damaging. Convulsions and delirium are evident upon withdrawal of the drug.

As in the case of narcotic addiction, chronic barbiturate intoxication is essentially the result of personality disorder and the abuse is regarded as a symptom of emotional illness. The authorities agree that unless the personality disorder can be treated and improved, little can be accomplished. Therefore, a need exists for communities to provide treatment and rehabilitation for the barbiturate addict in the same manner as for the narcotic addict.

The promiscuous use and careless handling of barbiturates is responsible for many suicides and accidental deaths. Acute poisoning with barbiturates is now the most common cause of death resulting from any solid poison, or any other poison except carbon monoxide poisoning.

A problem of growing proportions has been created by the chronic users of barbiturates and amphetamines, who are a menace to the public when driving on our streets and highways.

Legislation

Limited Federal control of barbiturates and amphetamines was authorized under the Food, Drug and Cosmetics Act of 1938. The Duram-Humphrey amendment to this act, which became effective in 1952, strengthened Federal control of the barbiturates and amphetamines by dividing drugs into two classes, dangerous drugs and all other drugs. Barbiturates and amphetamines come under the classification of dangerous drugs, which can be sold only on prescription.

The Act does not provide a special law for barbiturates and amphetamines, but includes them in the group of drugs which are of a character that must be confined to prescription use to avoid injury and abuse. The present federal law does not provide adequate control and supervision over the manufacture and distribution of barbiturates and amphetamines.

Legislation is needed to allow more stringent federal control of the production and distribution of barbiturates and amphetamines through the device of the inter-state commerce clause. To maintain proper supervision over the domestic traffic in these drugs, controls must also be placed on their importation and exportation.

Most States have some law for controlling the barbiturate and amphetamine problem. However, many state laws are inadequate. A decided improvement could be brought about if all States would enact uniform legislation to effectively combat the increased abuse of these drugs. Improved state legislation is essential to forbid operation of motor vehicles by anyone intoxicated by barbiturates and amphetamines.

Enforcement

The enforcement of the federal law controlling barbiturates and amphetamines is the responsibility of the Food and Drug Administration of the Department of Health, Education and Welfare. This agency is also responsible for the enforcement of all the provisions of the Food, Drug and Cosmetics Act. To enforce all provisions of the Act, the Food and Drug Administration has a limited force of approximately 200 food and drug inspectors. This inadequate manpower has curtailed investigations of the illicit traffic in barbiturates and amphetamines. The testimony received by your sub-committee indicates that only from 5% to 8% of their time can be devoted to this serious and growing problem.

It is evident that lack of proper control has encouraged the illicit traffic in barbiturates and amphetamines. This lack of control is apparent on federal, state and local levels and appears to be primarily due to a lack of proper appreciation of the serious proportions of the problem and a consequent under-staffing of enforcement forces along with inadequate legislation.

Control of the abuse of barbiturates and amphetamines, by the very nature of their production and supply, is a major responsibility of the States and local communities. The sub-committee urges that state and local enforcement staffs be increased immediately and trained personnel be provided

to combat the illicit traffic on a state-wide basis with more adequate implementing legislation provided where necessary.

Recommendations

The importance of barbiturates and amphetamines in the field of medicine is well recognized. However, the increasing abuse of these drugs and the resulting dangers to the individual and to society demonstrate the need for stronger legislation and more vigorous enforcement to eliminate this serious problem.

The sub-committee believes that the primary responsibility for the control of the abuse of barbiturates and amphetamines rests with the States. The Federal Government, through the inter-state commerce clause, has responsibility relating to the control of these dangerous drugs. With this in mind, your sub-committee makes the following recommendations with the hope that prompt action may be taken with respect to them :

1. Legislation based on the inter-state commerce clause should be enacted immediately to provide more stringent federal controls with respect to barbiturates and amphetamines so as to prevent their continued abuse.

2. Legislation should be enacted immediately to control the importation and exportation of barbiturates and amphetamines.

3. Possession through other than authorized sources should be made subject to proper penalties.

4. The Food and Drug Administration should be provided with additional appropriations to permit an increase in their enforcement personnel to cope with the illicit traffic in barbiturates and amphetamines.

5. State and local governments should be urged to increase their enforcement activities to combat the abuse of barbiturates and amphetamines.

6. The States should be urged to adopt uniform legislation to control barbiturates and amphetamines and provide adequate penalties for violations.

7. The States and local communities should establish a programme for the treatment and rehabilitation of barbiturate addicts and chronic users of amphetamines.

8. The current programmes for education of physicians, pharmacists, nurses, and all other persons handling barbiturates and amphetamines concerning the dangers inherent in these drugs should be intensified. The Federal Government, through its qualified agencies, should co-ordinate its endeavours in this field with the associations and groups representing the manufacturers, physicians, pharmacists and others in the drug field.

9. The Federal Government, in co-operation with state and local authorities, should maintain appropriate surveillance and records so as to be able to determine the adequacy of applicable laws and enforcement procedures relating to barbiturate and amphetamine abuse.

CONCLUSION

It is the conclusion of the sub-committee that drug addiction and abuses of barbiturates and amphetamines constitute one of the gravest social problems confronting our nation. The continued illicit use of these drugs inevitably brings about the destruction of the individual and imposes serious deleterious effects upon our communities.

The basic causes of development of the drug habit are inherent in the individual. Habits usually affect the individual only but, in the case of drug addiction, indulgence reacts adversely on the community through increased crime and anti-social vices.

Institutional care is the only effective means of providing treatment of addiction. Once a former habitual user has been successfully withdrawn from the use of a drug, his rehabilitation must be undertaken to assure his remaining a constructive member of society.

The illicit trafficking in narcotics, barbiturates, and amphetamines breeds persistence in their continued use and creates new users. It is therefore of paramount importance that every effort be made to eradicate this illicit traffic. Enforcement efforts must be increased on the federal, state and local levels. Illicit traffickers must be severely dealt with by the courts so that the costs of engaging in this evil commerce will deter even the most avaricious violator.

Elsewhere in this report the sub-committee has made specific recommendations designed to cure and prevent drug addiction and abuses, eliminate the illicit traffic in drugs, and provide for more effective control and regulation of lawful uses of narcotics, barbiturates, and amphetamines. The sub-committee is unanimous in urging the prompt adoption of these recommendations.

In order to round off the presentation of recent United States efforts against the abuse of narcotic drugs, the Bulletin *publishes hereby the main sections of a statute dealing with narcotics and marihuana, and of a bill, both introduced by the Hon. Hale Boggs, Chairman of the Sub-Committee on Narcotics, of the Committee on Ways and Means of the House of Representatives of the United States Congress.*

Traffic in narcotics, barbiturates and amphetamines in the United States

A. NARCOTICS AND MARIHUANA

PUBLIC LAW 728—84TH CONGRESS
CHAPTER 629—2ND SESSION
H.R. 11619

AN ACT

To amend the Internal Revenue Code of 1954 and the Narcotic Drugs Import and Export Act to provide for a more effective control of narcotic drugs and marihuana, and for other related purposes.

... this Act may be cited as the " Narcotic Control Act of 1956. "

Title I—Amendments to the 1954 Code, the Narcotics Drugs Import and Export Act, etc.

SEC. 101. UNLAWFUL ACQUISITION, ETC., OF MARIHUANA

Subsection (*a*) of section 4744 of the Internal Revenue Code of 1954 (unlawful acquisition of marihuana) is amended to read as follows :

" (*a*) PERSONS IN GENERAL.—It shall be unlawful for any person who is a transferee required to pay the transfer tax imposed by section 4741 (*a*)

" (1) to acquire or otherwise obtain any marihuana without having paid such tax, or

" (2) to transport or conceal, or in any manner facilitate the transportation or concealment of, any marihuana so acquired or obtained.

Proof that any person shall have had in his possession any marihuana and shall have failed, after reasonable notice and demand by the Secretary or his delegate, to produce the order form required by section 4742 to be retained by him shall be presumptive evidence of guilt under this subsection and of liability for the tax imposed by section 4741 (*a*)."

SEC. 102. UNLAWFUL TRANSPORTATION OF MARIHUANA

Subsection (*b*) of section 4755 of the Internal Revenue Code of 1954 (unlawful transportation of marihuana) is amended to read as follows :

" (*b*) TRANSPORTATION.—Except as otherwise provided in this subsection, it shall be unlawful for any person to send, ship, carry, transport, or deliver any marihuana within any Territory, the District of Columbia, or any insular possession of the United States, or from any State, Territory, the District of Columbia, or any insular possession of the United States into any other State, Territory, the District of Columbia, or insular possession of the United States. Nothing contained in this subsection shall apply

" (1) to any person who shall have registered and paid the special tax as required by sections 4751 to 4753, inclusive;

" (2) to any common carrier engaged in transporting marihuana;

" (3) to any employee acting within the scope of his employment for any person who shall have registered and paid the special tax as required by sections 4751 to 4753, inclusive, or to any contract carrier or other agent acting within the scope of his agency for such registered person;

" (4) to any person who shall deliver marihuana which has been prescribed or dispensed by a physician, dentist, veterinary surgeon, or other practitioner registered under section 4753 and employed to prescribe for the particular patient receiving such marihuana;

" (5) to any person carrying marihuana which has been obtained by the person from a registered dealer in pursuance of a written prescription referred to in section 4742 (*b*) (2), issued for legitimate medical uses by a physician, dentist, veterinary surgeon, or other practitioner registered under section 4753, if the bottle or other container in which such marihuana is carried bears the name and registry number of the druggist, serial number of prescription, name and address of the patient, and name, address, and registry number of the person issuing such prescription;

" (6) to any person carrying marihuana which has been obtained by the person as a patient from a registered physician, dentist, or other practitioner in the course of his professional practice if such marihuana is dispensed to the patient for legitimate medical purposes; or

" (7) to any United States, State, county, municipal, District, Territorial or insular officer or official acting within the scope of his official duties."

SEC. 103. VIOLATIONS OF NARCOTIC DRUG AND MARIHUANA LAWS

Section 7237 of the Internal Revenue Code of 1954 (violations of laws relating to narcotic drugs and marihuana) is amended to read as follows :

" SEC. 7237. VIOLATION OF LAWS RELATING TO NARCOTIC DRUGS AND TO MARIHUANA

" (*a*) WHERE NO SPECIFIED PENALTY IS OTHERWISE PROVIDED. —Whoever commits an offense, or conspires to commit an offense, described in . . . for which no specific penalty is otherwise provided, shall be imprisoned not less than 2 or more than 10 years and, in addition, may be fined not more than $20,000. For a second offense, the offender shall be imprisoned not less than 5 or more than 20 years and, in addition, may be fined not more than $20,000. For a third or subsequent offense, the offender shall be imprisoned not less than 10 or more than 40 years and, in addition, may be fined not more than $20,000.

" (*b*) SALE OR OTHER TRANSFER WITHOUT WRITTEN ORDER.— Whoever commits an offense, or conspires to commit an offense, described in . . . shall be imprisoned not less than 5 or more than 20 years and, in addition, may be fined not more than $20,000. For a second or subsequent offense, the offender shall be imprisoned not less than 10 or more than 40 years and, in addition, may be fined not more than $20,000. If the offender attained the age of 18 before the offense and

" (1) the offense consisted of the sale, barter, exchange, giving away, or transfer of any narcotic drug or marihuana to a person who had not attained the age of 18 at the time of such offense, or

" (2) the offense consisted of a conspiracy to commit an offense described in paragraph (1),

the offender shall be imprisoned not less than 10 or more than 40 years and, in addition, may be fined not more than $20,000.

" (*c*) CONVICTION OF SECOND OR SUBSEQUENT OFFENSE.—

. . . . . .

" (*d*) NO SUSPENSION OF SENTENCE, NO PROBATION; ETC.— Upon conviction

" (1) of any offense the penalty for which is provided in subsection (*b*) or this section, subsection (*c*), (*h*), or (*i*) of section 2 of the Narcotic Drugs Import and Export Act, as amended, or such Act of July 11, 1941, as amended, or

" (2) of any offense the penalty for which is provided in subsection (*a*) of this section, if it is the offender's second or subsequent offense,

the imposition or execution of sentence shall not be suspended, probation shall not be granted, section 4202 of title 18 of the United States Code shall not apply, and the Act of July 15, 1932 (47 Stat. 696; D.C. Code 24-201 and following), as amended, shall not apply.

" (*e*) UNLAWFUL DISCLOSURE OF INFORMATION ON RETURNS AND ORDER FORMS.—Any person who shall disclose the information contained in the statements or returns required under section 4732 (*b*) or 4754 (*a*), in the duplicate order forms required under section 4705 (*e*), or in the order forms or copies thereof referred to in section 4742 (*d*), except

" (1) as expressly provided in section 4773,

" (2) for the purpose of enforcing any law of the United States relating to narcotic drugs or marihuana, or

" (3) for the purpose of enforcing any law of any State or Territory or the District of Columbia, or any insular possession of the United States, or ordinance of any organized municipality therein, regulating the sale, prescribing, dispensing, dealing in, or distribution of narcotic drugs or marihuana,

shall be fined not more than $2,000 or imprisoned not more than five years or both."

SEC. 104. ADDITIONAL AUTHORITY FOR BUREAU OF NARCOTICS AND BUREAU OF CUSTOMS

(*a*) IN GENERAL.—Subchapter A of chapter 78 of the Internal Revenue Code of 1954 (discovery of liability and enforcement of title) is amended by inserting after section 7606 the following new section :

" SEC. 7607. ADDITIONAL AUTHORITY FOR BUREAU OF NARCOTICS AND BUREAU OF CUSTOMS

" The Commissioner, Deputy Commissioner, Assistant to the Commissioner, and agents, of the Bureau of Narcotics of the Department of the Treasury, and officers of the customs (as defined in section 401) (1) of the Tariff Act of 1930, as amended; 19 U.S.C., sec. 1401 (1), may

" (1) carry firearms, execute and serve search warrants and arrest warrants, and serve subpenas and summonses issued under the authority of the United States, and

" (2) make arrests without warrant for violations of any law of the United States relating to narcotic drugs (as defined in section 4731) or marihuana (as defined in section 4761) where the violation is committed in the presence of the person making the arrest or where such person has reasonable grounds to believe that the person to be arrested has committed or is committing such violation."

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SEC. 105. IMPORTATION, ETC., OF NARCOTIC DRUGS

Section 2 (*c*) of the Narcotic Drugs Import and Export Act, as amended (U.S.C., title 21, sec. 174), is amended to read as follows :

" (*c*) Whoever fraudulently or knowingly imports or brings any narcotic drug into the United States or any territory under its control or jurisdiction, contrary to law, or receives, conceals, buys, sells, or in any manner facilitates the transportation, concealment, or sale of any such narcotic drug after being imported or brought in, knowing the same to have been imported or brought into the United States contrary to law, or conspires to commit any of such acts in violation of the laws of the United States, shall be imprisoned not less than five or more than twenty years and, in addition, may be fined not more than $20,000. For a second or subsequent offense (as determined under section 7237 (*c*) of the Internal Revenue Code of 1954), the offender shall be imprisoned not less than ten or more than forty years and, in addition, may be fined not more than $20,000.

" Whenever on trial for a violation of this subsection the defendant is shown to have or to have had possession of the narcotic drug, such possession shall be deemed sufficient evidence to authorize conviction unless the defendant explains the possession to the satisfaction of the jury.

" For provision relating to sentencing, probation, etc., see section 7237 (*d*) of the Internal Revenue Code of 1954."

SEC. 106. SMUGGLING OF MARIHUANA

Section 2 of the Narcotic Drugs Import and Export Act, as amended, is amended by adding at the end thereof the following :

" (*h*) Notwithstanding any other provision of law, whoever, knowingly, with intent to defraud the United States, imports or brings into the United States marihuana contrary to law, or smuggles or clandestinely introduces into the United States marihuana which should have been invoiced, or receives, conceals, buys, sells, or in any manner facilitates the transportation, concealment, or sale of such marihuana after being imported or brought in, knowing the same to have been imported or brought into the United States contrary to law, or whoever conspires to do any of the foregoing acts, shall be imprisoned not less than five or more than twenty years and, in addition, may be fined not more than $20,000. For a second or subsequent offense (as determined under section 7237 (*c*) of the Internal Revenue Code of 1954), the offender shall be imprisoned for not less than ten or more than forty years and, in addition, may be fined not more than $20,000.

" Whenever on trial for a violation of this subsection, the defendant is shown to have or to have had the marihuana in his possession, such possession shall be deemed sufficient evidence to authorize conviction unless the defendant explains his possession to the satisfaction of the jury.

. . . . . .

" As used in this subsection, the term ' marihuana ' has the meaning given to such term by section 4761 of the Internal Revenue Code of 1954.

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SEC. 107. SALE OF HEROIN TO JUVENILES—PENALTIES

Section 2 of the Narcotic Drugs Import and Export Act, as amended, is further amended by adding at the end thereof the following :

" (*i*) Notwithstanding any other provision of law, whoever, having attained the age of eighteen years, knowingly sells, gives away, furnishes, or dispenses, facilitates the sale, giving, furnishing, or dispensing, or conspires to sell, give away, furnish, or dispense, any heroin unlawfully imported or otherwise brought into the United States, to any person who has not attained the age of eighteen years, may be fined not more than $20,000, and shall be imprisoned for life, or for not less than ten years, except that the offender shall suffer death if the jury in its discretion shall so direct.

" Whenever on trial for a violation of this subsection the defendant is shown to have had heroin in his possession, such possession shall be sufficient proof that the heroin was unlawfully imported or otherwise brought into the United States unless the defendant explains his possession to the satisfaction of the jury.

" For the purposes of this subsection, the term " heroin ' means any substance identified chemically as diacetylmorphine or any salt thereof. . . . "

SEC. 108. UNLAWFUL POSSESSION OF NARCOTIC DRUGS AND MARIHUANA ON VESSELS

(*a*) IN GENERAL.—Subsection (*a*) of the first section of the Act of July 11, 1941 (21 U.S.C., sec. 184a), is amended by striking out " fined not more than $5,000 or be imprisoned for not more than five years, or both," and inserting in lieu thereof " imprisoned not less than five or more than twenty years and, in addition, may be fined not more than $20,000. For a second or subsequent offense (as determined under section 7237 (*c*) of the Internal Revenue Code of 1954), the offender shall be imprisoned not less than ten or more than forty years and, in addition, may be fined not more than $20,000. . . . "

SEC. 109. TERRITORIAL EXTENT OF LAW

Section 4774 of the Internal Revenue Code of 1954 (territorial extent of certain laws relating to narcotic drugs and marihuana) is amended by adding at the end thereof the following : " On and after the effective date of the Narcotic Control Act of 1956, the provisions referred to in the preceding sentence shall not apply to the Commonwealth of Puerto Rico unless the Legislative Assembly of the Commonwealth of Puerto Rico expressly consents thereto in the manner prescribed in the constitution of the Commonwealth of Puerto Rico for the enactment of a law."

Title II—Amendments to Title 18 of the United States Code

SEC. 201. ADDITION OF NEW CHAPTER—NARCOTICS

. . . . . .

" § 1401. Definitions

" As used in this chapter

" The term ' heroin ' shall mean any substance identified chemically as diacetylmorphine or any salt thereof.

" The term ' United States ' shall include the District of Columbia, the Territory of Alaska, the Territory of Hawaii, the Commonwealth of Puerto Rico, the insular possessions of the United States, the Trust Territory of the Pacific, and the Canal Zone.

§ 1402. Surrender of heroin—procedure

Any heroin lawfully possessed prior to the effective date of this Act shall be surrendered to the Secretary of the Treasury, or his designated representative, within one hundred and twenty days after the effective date of the Act, and each person making such surrender shall be fairly and justly compensated therefor. The Secretary of the Treasury, or his designated representative, shall formulate regulations for such procedure. All quantities of heroin not surrendered in accordance with this section and the regulations promulgated thereunder by the Secretary of the Treasury, or his designated representative, shall by him be declared contraband, seized, and forfeited to the United States without compensation. All quantities of heroin received pursuant to the provisions of this section, or otherwise, shall be disposed of in the manner provided in section 4733 of the Internal Revenue Code of 1954, except that no heroin shall be distributed or used for other than scientific research purposes approved by the Secretary of the Treasury, or his designated representative.

§ 1403. Use of communication facilities—penalties

" (*a*) Whoever uses any communication facility in committing or in causing or facilitating the commission of, or in attempting to commit, any act or acts constituting an offense or a conspiracy to commit an offense the penalty for which is provided in

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shall be imprisoned not less than two and not more than five years, and in addition, may be fined not more than $5,000. Each separate use of a communication facility shall be a separate offense under this section.

" (*b*) For purposes of this section, the term ' communication facility ' means any and all public and private instrumentalities used or useful in the transmission of writings, signs, signals, pictures and sounds of all kinds by mail, telephone wire, radio, or other means of communication.

§ 1404. Motion to suppress—appeal by the United States

" In addition to any other right to appeal, the United States shall have the right to appeal from an order granting a motion for the return of seized property and to suppress evidence made before the trial of a person charged with a violation of [reference to narcotics offenses]

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§ 1405. Issuance of search warrants—procedure

" In any case involving a violation of any provision of . . . . . [reference to narcotics offenses]

" (1) a search warrant may be served at any time of the day or night if the judge or the United States Commissioner issuing the warrant is satisfied that there is probable cause to believe that the grounds for the application exist, and

" (2) a search warrant may be directed to any officer of the Metropolitan Police of the District of Columbia authorized to enforce or assist in enforcing a violation of any of such provisions.

§ 1406. Immunity of witnesses

" Whenever in the judgment of a United States attorney the testimony of any witness, or the production of books, papers, or other evidence by any witness, in any case or proceeding before any grand jury or court of the United States involving any violation of . . . . . [reference to narcotics offenses] is necessary to the public interest, he, upon the approval of the Attorney General, shall make application to the court that the witness shall be instructed to testify or produce evidence subject to the provisions of this section, and upon order of the court such witness shall not be excused from testifying or from producing books, papers, or other evidence on the ground that the testimony or evidence required of him may tend to incriminate him or subject him to a penalty or forfeiture. But no such witness shall be prosecuted or subjected to any penalty or forfeiture for or on account of any transaction, matter, or thing concerning which he is compelled, after having claimed his privilege against self-incrimination, to testify or produce evidence, nor shall testimony so compelled be used as evidence in any criminal proceeding (except prosecution described in the next sentence) against him in any court. No witness shall be exempt under this section from prosecution for perjury or contempt committed while giving testimony or producing evidence under compulsion as provided in this section.

§ 1407. Border crossings—narcotic addicts and violators

" (*a*) In order further to give effect to the obligations of the United States pursuant to The Hague convention of 1912, proclaimed as a treaty on March 3, 1915 (38 Stat. 1912), and the limitation convention of 1931, proclaimed as a treaty on July 10, 1933 (48 Stat. 1571), and in order to facilitate more effective control of the international traffic in narcotic drugs, and to prevent the spread of drug addiction, no citizen of the United States who is addicted to or uses narcotic drugs, as defined in section 4731 of the Internal Revenue Code of 1954, as amended (except a person using such narcotic drugs as a result of sickness or accident or injury and to whom such narcotic drug is being furnished, prescribed, or administered in good faith by a duly licensed physician in attendance upon such person, in the course of his professional practice) or who has been convicted of a violation of any of the narcotic or marihuana laws of the United States, or of any State thereof, the penalty for which is imprisonment for more than one year, shall depart from or enter into or attempt to depart from or enter into the United States, unless such person registers, under such rules and regulations as may be prescribed by the Secretary of the Treasury with a customs official, agent, or employee at a point of entry or a border customs station. Unless otherwise prohibited by law or Federal regulation such customs official, agent, or employee shall issue a certificate to any such person departing from the United States; and such person shall, upon returning to the United States, surrender such certificate to the customs official, agent, or employee present at the port of entry or border customs station.

" (*b*) Whoever violates any of the provisions of this section shall be punished for each such violation by a fine of not more than $1,000 or imprisonment for not less than one nor more than three years, or both."

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Title III—Amendments to Immigration and Nationality Act, etc.

SEC. 301. AMENDMENTS TO IMMIGRATION AND NATIONALITY ACT

(*a*) Section 212 (*a*) (23) of the Immigration and Nationality Act is amended to read as follows :

" (23) Any alien who has been convicted of a violation of, or a conspiracy to violate, any law or regulation relating to the illicit possession of or traffic in narcotic drugs, or who has been convicted of a violation of, or a conspiracy to violate, any law or regulation governing or controlling the taxing, manufacture, production, compounding, transportation, sale, exchange, dispensing, giving away, importation, exportation, or the possession for the purpose of the manufacture, production, compounding, transportation, sale, exchange, dispensing, giving away, importation, or exportation of opium, coca leaves, heroin, marihuana, or any salt derivative or preparation of opium or coca leaves, or isonipecaine or any addiction-forming or addiction-sustaining opiate; or any alien who the consular officer or immigration officers know or have reason to believe is or has been an illicit trafficker in any of the aforementioned drugs; ".

(*b*) Section 241 (*a*) (11) of such Act is amended to read as follows :

" (11) is, or hereafter at any time after entry has been a narcotic drug addict, or who at any time has been convicted of a violation of, or a conspiracy to violate, any law or regulation relating to the illicit possession of or traffic in narcotic drugs, or who has been convicted of a violation of, or a conspiracy to violate, any law or regulation governing or controlling the taxing, manufacture, production, compounding, transportation, sale, exchange, dispensing, giving away, importation, exportation, or the possession for the purpose of the manufacture, production, compounding, transportation, sale, exchange, dispensing, giving away, importation, or exportation of opium, coca leaves, heroin, marihuana, any salt derivative or preparation of opium or coca leaves or isonipecaine or any addiction-forming or addiction-sustaining opiate; ".

(*c*) Section 241 (*b*) of such Act is amended by adding at the end thereof the following additional new sentence : " The provisions of this subsection shall not apply in the case of any alien who is charged with being deportable from the United States under subsection (*a*) (11) of this section."

SEC. 302. AMENDMENT TO ACT OF JUNE 14, 1930

Section 8 of the Act entitled " An Act to create in the Treasury Department the Bureau of Narcotics, and for other purposes ", approved June 14, 1930 (46 Stat. 587), as amended, is amended to read as follows :

" SEC. 8. (*a*) The Secretary of the Treasury shall cooperate with the several States in the suppression of the abuse of narcotic drugs in their respective jurisdictions, and to that end he is authorized (1) to cooperate in the drafting of such legislation as may be needed, if any, to effect the end named, (2) to arrange for the exchange of information concerning the use and abuse of narcotic drugs in said States and for cooperation in the institution and prosecution of cases in the courts of the United States and before the licensing boards and courts of the several States, (3) to conduct narcotic training programs, as an integral part of narcotic law enforcement for the training of such local and State narcotic enforcement personnel as may be arranged with the respective local and State agencies, and (4) to maintain in the Bureau of Narcotics a ' Division of Statistics and Records ' to accept, catalogue, file, and otherwise utilize narcotic information and statistics, including complete records on drug addicts and other narcotic law offenders which may be received from Federal, State, and local agencies, and make such information available for Federal, State, and local law enforcement purposes. Federal agencies of the United States may make available to the Bureau of Narcotics the names, identification, and any other pertinent information which may be specified by the Secretary of the Treasury, or his designated representative, of all persons who are known by them to be drug addicts or convicted violators of any of the narcotic laws of the United States, or any State thereof. The Commissioner of Narcotics shall request and encourage all heads of State and local agencies to make such information available to the Bureau of Narcotics.

" (*b*) As used in this section, the term ' Federal agencies ' shall include (1) the executive departments, (2) the Departments of the Army, Navy and the Air Force, (3) the independent establishments and agencies in the executive branch, including corporations wholly owned by the United States, and (4) the municipal government of the District of Columbia.

" The Secretary of the Treasury is hereby authorized to make such regulations as may be necessary to carry this section into effect."

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Approved July 18, 1956.

B. BARBITURATES AND AMPHETAMINES

BILL INTRODUCED BY THE HON. HALE BOGGS *

[H.R. 11108, 84th Cong., 2nd sess.]

. . . . . .

SEC. 2. Section 201 of the Federal Food, Drug and Cosmetics Act, as amended (21 U.S.C. 321) is amended by adding at the end thereof the following :

" (s) The term ' barbiturate ' means any drug consisting in whole or in part of any of the salts of barbituric acid, or any derivative of barbituric acid, or any of the salts of such derivative, which has been designated by the Secretary, under section 502 (d), as habit forming.

" (*t*) The term ' amphetamine ' means any drug consisting in whole or in part of racemic amphetamine sulfate or dextro amphetamine sulfate."

" (*o*) (1) The manufacture, compounding, processing, or possession of any barbiturate or amphetamine in violation of section 508 (*a*); (2) the sale, delivery, or other dispositions of any barbiturate or amphetamine in violation of section 508 (*b*); or (3) (A) the failure to prepare or keep, or (B) the refusal to permit access to or copying of, any record with respect to any barbiturate or amphetamine as required by section 508 (*c*)."

SEC. 4.

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SEC. 5.

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SEC. 6. Chapter V of such Act is amended by adding at the end thereof a new section as follows :

" BARBITURATES AND AMPHETAMINES

" SEC. 508 (*a*). No person shall manufacture, compound, process or possess any barbiturate or amphetamine except the following :

" (1) Manufacturers, compounders, and processors who have listed their names and places of business with the Secretary and who are regularly engaged in preparing pharmaceutical chemicals or prescription drugs for distribution through branch outlets, wholesale druggists, or by direct shipment to retail pharmacies or to hospitals, clinics, public health agencies, or physicians for dispensing by registered pharmacists upon prescriptions or for use by or under the supervision of practitioners licensed by law to administer such drugs in the course of their professional practice.

" (2) Branch outlets established by listed manufacturers, compounders, or processors described in paragraph (1), and wholesale druggists who maintain establishments in conformance with local laws and are regularly engaged in supplying prescription drugs to retail pharmacies, or to hospitals, clinics, public health agencies, or physicians, for dispensing by registered pharmacists upon prescriptions or for use by or under the supervision of practitioners licensed by law to administer such drugs in the course of their professional practice.

" (3) Retail pharmacies, hospitals, clinics, and public health agencies which maintain establishments, in conformance with local laws regulating the practice of pharmacy and medicine, regularly engaged in dispensing prescription drugs upon prescriptions of practitioners licensed to admi-

* At the time of going to press, no official information had been received by the Editor as to the adoption of this bill by the US Congress.

nister such drugs for patients under the care of such practitioners in the course of their professional practice.

" (4) Practitioners licensed by law to prescribe or administer barbiturates or amphetamines who have such drugs in their possession for use in the course of their professional practice.

" (5) Carriers and warehousemen who possess barbiturates or amphetamines in the ordinary course of their business of transporting and storing such drugs.

" (6) Persons who possess barbiturates or amphetamines for use in research, teaching, or chemical analysis and not for sale.

" (7) Officers and employees of Federal, State, Territorial, or local governments whose possession of such drugs is in the course of their official duties.

" (8) Persons to whom barbiturates or amphetamines have been dispensed, or for whom such drugs have been prescribed in conformance with section 503 (*b*), by practitioners licensed by law to prescribe and administer such drugs in the course of such practitioner's professional practice.

" (9) An employee of any person described in paragraph (1) through paragraph (7), and a nurse or other medical technician under the supervision of a practitioner licensed by law to administer such drugs, having possession of such drugs by reason of his employment or occupation and not on his own account.

" (b) No person shall sell, deliver, or otherwise dispose of any barbiturate or amphetamine to a person not authorized by sub-section (*a*) to possess such drugs.

" (*c*) Every person engaged in manufacturing, compounding, processing, selling, delivering, or otherwise disposing of any barbiturate or amphetamine shall, upon the effective date of this section, prepare a complete record of all stocks of barbiturates and amphetamines on hand and shall keep such record for three years. Thereafter, every such person manufacturing, compounding, or processing any barbiturate or amphetamine shall prepare and keep, for not less than three years, a record of the kind and quantity of barbiturates and amphetamines manufactured, compounded, or processed and the date of such manufacture, compounding, or processing; and every such person selling, delivering, or otherwise disposing of any barbiturate or amphetamine shall prepare or obtain, and keep for not less than three years, a record of the kind and quantity of such barbiturate or amphetamine received, sold, delivered, or otherwise disposed of, the name and address of the person from whom it was received and to whom it was sold, delivered, or otherwise disposed of, and the date of such transaction :

Provided, however, That the provisions of this subsection shall not apply to practitioners licensed by law to prescribe or administer barbiturates or amphetamines who dispense such drugs in the course of their professional practice. Every person required by this sub-section to prepare, or obtain and keep, records shall, upon request of an officer or employee designated by the Secretary, permit such officer or employee at reasonable times to have access to and copy such records.

" (*d*) The Secretary may by regulations remove any barbiturate or amphetamine from the operation of this section when such regulation of its manufacture, compounding, processing, possession and disposition is not necessary for the protection of the public health."

SEC. 7. Nothing in this Act shall be construed as authorizing the manufacture, compounding, processing, possession, sale, delivery, or other disposal of any barbiturate or amphetamine in any State or Territory in contravention of the laws of such State or Territory.

SEC. 8. This Act shall take effect one hundred and eighty days after its enactment.

TECHNICAL

A note on synthetic narcotics

by Charles Vaille and Gabriel Stern

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INTRODUCTION

The manufacture of synthetic narcotics has become, since the last war, a new factor in the campaign against drug addiction. It has led to a good deal of heated argument during the last few years, which is likely to increase the difficulties.

In two papers published in the last two numbers of the *Bulletin on Narcotics* two entirely different conclusions were reached, on technical grounds, by their authors. A. Nordal [1] wrote : " As far as their margin of therapeutic safety is concerned, the natural drugs are by no means inferior to the synthetic ones. In fact, morphine is in this respect superior to all known analgesics," whereas M. H. Seevers [2] came to the conclusion that " On the contrary, the scientific and medical advances in the synthetic narcotic field have been so rapid that even today very few natural products are indispensable to the public health."

It is not the purpose of this note to re-open this technical controversy; at the request of several of our colleagues in the United Nations Commission on Narcotic Drugs, we should, however, like to draw attention to some of the psychological and social problems arising in connexion with narcotic drugs, the importance of which has been underlined by fifty years of international work on this subject. The question of synthetic narcotics cannot in fact be treated from a purely technical standpoint.

I. Nature of narcotic drugs

It is unnecessary to revert to the definitions proposed for the various drugs; the addiction-producing effects [3] are unfortunately only too well known. Addiction itself is no longer in dispute, even if there is still some arguement about certain terms used in those definitions. Moreover, it is no longer necessary to stress the value of the experimental work done to establish the addiction-producing properties of chemical substances; a tribute must, however, be paid to the scientists of the U. S. Public Health Service Hospital at Lexington, who have played such an important part in that connexion.

N. B. Eddy, H. Halbach and O. J. Braenden have recently published a noteworthy summary of recent work in this field.[4] This paper, to which the Commission on Narcotic Drugs rightly paid a tribute at its eleventh session, calls for more detailed study than is possible in this note. While it is not proposed to discuss the conclusions, some doubt must be expressed about the methods used. For instance, as the authors themselves point out, tests made on drug addicts cannot be automatically applied to people who are not drug addicts. This does not mean that we wish to criticize the tests in any way. Moreover, the American scientists have never under-estimated the importance of psychological factors, which create a by no means negligible element of uncertainty. At all events, this fine piece of work blazes the trail for future research. As a whole, the experiments carried out at Lexington are without parallel in this scientific field and an attempt must be made to draw from them as many lessons as possible with regard to the theory of the subject.

One striking fact that emerges from the study is the relative parallelism between the analgesic action of a substance and its physical dependence property. The authors mention seven substances out of seventy-eight studied which appear to them to be exceptions to this rule. Exceptions are always instructive, but it does not seem to us that a clear distinction has been established between these seven substances and the others.

Let us now examine these exceptions.

1. *Oxycodone*

This would indeed appear to be an exception when its capacity to produce physical dependence in man is compared with its analgesic effect on mice. If, however, its property of physical dependence is compared with its analgesic action on man, as is more logical, oxycodone will be found to conform to the general rule of relative parallelism. This is

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[1] A. Nordal. Natural and synthetic drugs with morphine-like effects considered from a pharmacognostic point of view, *Bulletin on Narcotics*, Vol. VIII, No. 1.

[2] M. H. Seevers. Medical perspectives on international control of synthetic narcotics, *Bulletin on Narcotics*, Vol. VIII, No. 2.

[3] French : " action toxicomanogène ", a term first used by Dr. P. O. Wolff.

[4] The authors refer to the article entitled " Synthetic Substances with Morphine-like Effect : Relationship between Analgesic Action and Addiction Liability, with a Discussion of the Chemical Structure of Addiction-Producing Substances " by Dr. Nathan B. Eddy, Dr. H. Halbach and Dr. Olav J. Braenden, published in the *Bulletin of the World Health Organization*, 1956, *14*, No. 3, pp. 353-402. A corrigendum and addendum to this article were published in Volume 14, No. 4, of this *Bulletin*. An advance copy of the article was published in United Nations document E/CN.7/311. Where the authors mention this article, they refer to this document. The page references are to the English version of the document. This article, *inter alia*, mentions 14 exceptions from general parallelism of analgesic and addictive properties. It includes, *inter alia*, Table II (pp. 365-380) and Table IV (pp. 385-388). Table II gives quantitative data on analgesic effectiveness and addiction liability of many drugs. Table IV gives index figures on the analgesic action and physical dependence property of these drugs. These figures indicate the position of each drug in their order of effectiveness, as well as the relation of their properties in respect to those of morphine. These quantitative data and index figures are based on experiments made on men or mice in the laboratories of the National Institutes of Health, United States of America. [Editor's note.]

true, as indeed the authors themselves have recognized, in the case of all products where considerable differences are found between their analgesic action on man and on animals. Hence, it is not possible to consider them as exceptions. Tests on oxycodone addicts carried out in France show beyond question that its addiction-producing potency is similar to that of morphine.

2. *Betaprodine and Alphameprodine*

There seems to be a misprint here.[5] On page 386, the authors state that the physical dependence property of these two substances has been assigned the number 142 which corresponds exactly with the data in Table II, page 375.[5] However, the order of effectiveness of these two products is given as 32-33, whereas morphine (index 100) has an order of effectiveness of 24-29. The number 142 should have an order of effectiveness lower than that of morphine. If the order of effectiveness given by the authors is ignored, it is clear that there is a relative parallelism between the analgesic action and the property of physical dependence which prevents these two products being considered as exceptions.

3. *dl-α-1.3-Dimethyl-4-phenyl-4-propionoxypiperidine*

The physical dependence property of this product has been assigned the number 25 (p. 386), presumably obtained from the dose administered (p. 376). However, it is stated in a footnote : " 24-hour substitution carried out, 200 mg. subcutaneously every 4 hours. The morphine abstinence syndrome was completely suppressed." The question arises whether this was not a single experiment, in which case smaller doses which might possibly have had the same effect were not tried out. If this assumption is correct, it is obviously not certain that this product is an exception.

4. *Phenadoxone*

This product has been assigned the physical dependence property index < 83, obtained from Table II (p. 377).[5] It would, however, appear that in this case also the experiment was made only with a dose of 60 mg which produced " spectacular relief " of abstinence. In Table II the dose is therefore given as < 60. In this case the physical dependence index should not result in a figure of < 83, but > 83, and here again only if experiments with smaller doses had been made would we feel justified in expressing an opinion on the subject. It should also be noted that our remark about oxycodone also holds good for phenadoxone, for if it is twice as potent as morphine in its action on mice, it is six times less potent in the case of man. It would thus appear that this substance is not an exception either.

5. *Dihydrocodeinone enol acetate*

Once again, a great difference is found in the action on men and on mice and it is therefore not possible to regard this substance as an exception.

6. *Betachloromorphide*

With regard to the last product, *Betachloromorphide*, mentioned on page 391, the authors themselves state on that page that the physical dependence figure is uncertain.

The seven exceptions mentioned by the authors are not therefore absolutely conclusive. All that can be said is that there is some hope, and that research in that direction should be carried further.

[5] See note 4.

For the time being, however, it would be wiser to take it as a *general rule*[6] that there is a relative parallelism between analgesic action and the physical dependence potency.

It must be stressed in this connexion that such parallelism can never be more than *relative*.

In so complex a field as that of drug addiction, variations must be expected not only from one individual to another but even in the same individual according to circumstances. And if only because of the psychological factors which, even if their importance is minimized, cannot be completely eliminated, there is no hope of establishing a strictly proportional relation between two different physiological phenomena provoked by the administration of one and the same product.

In this respect there is absolutely no difference between " natural " and " synthetic " drugs. Indeed, no one has ever claimed that there could be, and it is certainly not on such grounds that a different attitude should be adopted towards synthetic as opposed to natural drugs. Incidentally, it may be pointed out that this difference in attitude must generally speaking apply to any *new* drug, even of natural origin.

Do the experiments with new drugs provide conclusive evidence of their addiction-producing properties and the extent of the scourge they might become ?

The answer to both these questions is no. Social factors, as efforts have been made to show, intervene in the aetiology and development of drug addiction. Study of the social scourges due to drugs points to the paradoxical *a priori* conclusion that the magnitude of such scourges is not proportional to the intensity of the addiction-producing properties of the products which give rise to them.[7]

The extent of the scourge seems to depend on the living conditions of the population affected and also on the *preventive measures adopted by governments*—finally, then, on the *social aspect of the problem*.

It has rightly been stressed that products now regarded as addiction-producing were not characterized as such when they first began to be used. Is it necessary to recall that it was the therapeutic use of heroin and pethidine that led to the misuse of those substances ?

In short, there are two important facts to be borne in mind :

(1) That valid tests can be conducted regarding the physical dependence potency of an analgesic product. So far, a relative parallelism has been noted between analgesic action and physical dependence potency.

(2) In the present state of affairs, however, such tests can provide no certainty as to the extent of the addiction to which an analgesic product may give rise.

This suggests that a solid factual foundation for the attitude to be adopted towards synthetic drugs is mainly to be sought in fields other than the purely technical one.

II. Utility of synthetic drugs

We shall first dispose of the economic aspect.

From a purely economic standpoint it clearly will be in the interest of any country, other than an opium producer

[6] As everyone knows, no biological law can be regarded as *absolute*, even when there are no known exceptions.

[7] Ch. Vaille and G. Stern. " Les stupéfiants : fléau social ", *Expansion scientifique française*, Paris, 1955.

which has a chemical industry of its own, to use only synthetic substances.

We trust, however, that this consideration will never be decisive in determining the attitude of governments towards synthetic drugs.

Even those countries which have taken the most draconian measures with respect to synthetic drugs have not absolutely forbidden the use of those which make an important contribution to therapeutics.

They have never questioned the need to pursue research with a view to producing a sufficiently effective analgesic having little or no addiction-producing properties.

Even if some may have expressed doubts about the theoretical possibility of such an achievement, the practical and theoretical advances in modern chemotherapy show that no technical problem must be dismissed *a priori* as insoluble.

Here again there is no reason to believe that anyone has ever suggested opposing scientific research.

The question whether synthetic drugs should be used turns on two technical points : their presumed analgesic action and their addiction-producing properties. Any other therapeutic properties they may possess, though not, of course, negligible, are none the less of *secondary* importance. The essential purpose of any analgesic is to relieve pain, and the essential quality of any effective analgesic is the relative unlikelihood of its producing addiction.

It has been claimed that some synthetic drugs set up less severe respiratory depression and gastro-intestinal reactions than morphine. This fact is not disputed, but such advantages must be weighed against the disadvantages which we shall mention later.

It has also been asserted that a synthetic drug addict is easier to treat. However, all experts agree that the withdrawal of the drug from an addict presents no major difficulty. It is after that stage that the difficulties begin, when it is a question of his readjustment to normal life and of *preventing recidivism*. No superiority can be claimed for synthetic drugs in this respect.

Consequently, any superiority that a synthetic drug might have over a natural drug with comparable analgesic properties could only lie in its distinctly weaker addiction-producing potency; and it is impossible to claim today that synthetic drugs possess that characteristic.

The proposal has been made to the United Nations Commission on Narcotic Drugs that the criterion for the use of a synthetic drug should be that it is indispensable for public health.

The interpretations given to that proposal have tended to cast doubt on the commonsense of those advocating such a criterion. The expression " indispensable for public health " implies either that the drug makes an important contribution to therapeutics, as already indicated, or that its use is a practical necessity owing to insufficient supplies (for whatever reason) of natural analgesics for the sick.

There has been some debate as to the authority competent to decide whether a drug is indispensable or not. As, however, the international conventions provide for the establishment in each State of an administration for the purpose, *inter alia*, of " organizing the campaign against drug addiction by taking all useful steps to prevent its development ",[8] it is self-evident that the task should devolve on that administration which, having obtained all the necessary technical advice, is alone competent to pass final judgment, because it alone is *in possession of all the facts of the case*. Among the technical opinions on which the decision is based the views of the medical profession must clearly carry the greatest weight.

From a purely technical standpoint, one is bound to agree with A. Nordal[9] that in therapeutics synthetic drugs have no decisive superiority over natural drugs and vice versa, if their comparative *advantages* only are taken into account.

Hence, it is when one comes to consider the *disadvantages* that one gets to the root of the problem.

III. Disadvantages of synthetic drugs

The real point at issue is the way in which *any new drug* can be put on the market with no restrictions other than observance of the national and international provisions deriving from the Conventions.

In point of fact, the drugs in question are mainly synthetic ones, a large number of which are included among new products, while very few natural drugs are found among them.

The right to try out a new product under supervision is beyond question, for that is the only way to assess its properties. But this right must be restricted to some extent.

Before the sale of a new product to the public is authorized, it should, after adequate physiological experiments, be subjected to clinical tests, which is the only way in which we can ascertain its action on man. These tests, as is the practice in many countries, should be made only in hospitals and similar institutions under the direction of independent experts (i.e., not selected by the manufacturer) and on *voluntary* patients. It should be possible to carry them out on as wide a scale as may be necessary and for the length of time required to form an opinion.

Only after the clinical experts have presented their conclusions should the decision whether or not to authorize the sale of the drug to the public be taken.

The dangers of hastily allowing a new product to be used for several years by the medical profession in general in order to assess its effects are very considerable. This practice may perhaps have been common at one time, but it is precisely its disadvantages which have led to the development of the clinical tests referred to above.

It is hardly necessary to point out that, administratively, it is much easier to refuse an authorization than to cancel one issued several years earlier.

It must also be borne in mind that the 1948 Protocol enabling the existing Conventions to be applied to new products has been ratified by only 47 States and that it is by no means universally applied. Furthermore, in quite a large number of States, a new product is sometimes made available to patients before the decision to bring it under the narcotic regulations is reached.

Finally, *as a matter of principle*, it is not sufficient to take note of the present situation; its logical implications must also be grasped.

There is no field to which the proverb " prevention is better than cure " can more appropriately be applied than that of narcotic drugs.

[8] Article 15 (c) of the so-called Limitation Convention signed at Geneva on 13 July 1931.

[9] *Op. cit.*

(a) *Control of manufacture and trade*

It was stated in 1951 [10] that in *1949* it was already easy to foresee that a considerable number of synthetic drugs would be evolved in a few years' time. Thirty of them (not counting their various possible salts) have already been brought under international control, but the number in existence is much larger.

Are we to wait until there are a thousand of them before enquiring whether the number of such drugs is not a danger in itself ?

Can anyone today fail to realize that the campaign against addiction depends on control of production, trade, and the *use* of drugs ?

If it is to be effective, control must be complete and its efficacy is in inverse proportion to the number of items controlled.

It can be confidently asserted that even at present no effective control could be exercised in any country over the thirty synthetic narcotic derivatives internationally recognized as such, if they were all in use.

Hence the *number* of synthetic drugs raises from the very outset the problem of the *efficacy* of control.

Let us take as an example the customs officers responsible for checking foreign trade transactions. How are they to identify all these drugs when even the most distinguished chemists have to consult technical works in order not to lose themselves among the multitude of new chemical products ?

It is more than probable that a synthetic narcotic derivative exported under its chemical name would pass unnoticed by any customs service in the world.

It therefore seems to us that the mere fact that the number of synthetic derivatives is steadily increasing gives a specific character to this category of drug.

The difficulties of controlling their manufacture need hardly be stressed. We are all aware of the defects in the control of the manufacture of opium alkaloids and the fraudulent practices which they have made possible, despite the existence of sound data on which to base control.[11]

The fact that no important cases of illicit trafficking in synthetic drugs have *so far* been discovered is not really reassuring. It is merely a matter of time.

Moreover, the supply of natural products through illicit channels is unfortunately sufficient to make it unnecessary for addicts to look elsewhere.

In view of the relative ineffectiveness of the efforts to suppress the illicit traffic, laudable though they are, one can well imagine what the struggle would be like if *synthetic drugs were added* to the natural ones.

It would be flying in the face of all experience in this field to await the discovery of cases of illicit traffic before vainly seeking a remedy, *when there is still time to prevent them.*

But, if we wait, on whose shoulders will the moral responsibility for such traffic fall ?

(*b*) *Control of use*

France is one of the countries where the consumption of natural drugs (morphine, heroin, cocaine and oxycodone) has fallen since the end of the war.

This reduction has been obtained mainly through very strict *control of the use of drugs.* This control has revealed [12] that too many doctors prescribe narcotic drugs without due regard for their addiction-producing properties and in many cases when other remedies would be equally effective.

The problem is not peculiar to France. It is sufficient to examine the table given below, based on data taken from the latest report of the Permanent Central Opium Board [13] relating to countries of comparable social levels, to see that the consumption of drugs is abnormally high in certain countries.

CONSUMPTION OF MORPHINE AND PETHIDINE IN 1954

(in kg per million inhabitants)

Country	*Morphine*	*Pethidine*
France	1.44	5.46
Japan	1.77	0.05
Yugoslavia	2.83	1.27
Germany	3.08	10.35
New Zealand	3.34	42.52
Italy	3.4	7.87
Argentina	3.57	
Switzerland	4.45	7.9
Union of Soviet Socialist Republics	4.53	
Canada	4.61	22.05
Sweden	6.24	1.11
Netherlands	6.5	4.81
United States	7.15	44.15
Belgium	7.26	4.54
Australia	14.02	31.94
United Kingdom	14.51	23.43
Norway	18.87	12.09
Denmark	21.06	41.68

For a long time the part played by the therapeutic use of drugs in causing addiction was neglected. Yet it is undoubtedly an important one in countries with highly organized health services.

It is not easy to make an accurate assessment of the effect of the discovery of synthetic drugs on the general volume of drug consumption at the present time. Nor is it an easy matter to compare pre-war and post-war figures, especially as the 1931 Convention seemed to have brought about a steady decline in the consumption of traditional drugs (morphine, cocaine, heroin).

For an independent comparison of these factors, we must take the morphine consumption figure for 1950, when there were as yet no declared figures for the consumption of synthetic drugs throughout the world.

We then find that : [14]

World consumption of morphine in 1950.... 5,615 kg [15]
» » » » 1954.... 5,150 kg
» » » pethidine in 1950.... 11,413 kg
» » » methadone in 1954.... 553 kg

[10] Ch. VAILLE and G. STERN. " Le problème des stupéfiants synthétiques ", in *La Presse médicale, N° 33,* 18 May 1951.

[11] See Ch. VAILLE and G. STERN, " Control of the opium alkaloid manufacturers ", United Nations, *Bulletin on Narcotics,* Vol. VIII, No. 2.

[12] See Ch. VAILLE and G. STERN, " Medical and Social Aspects of Drug Addiction in France ", United Nations, *Bulletin on Narcotics,* Vol. VI, No. 2, May-August 1954.

[13] Document E/OB.11, November 1955.

[14] Report of the Permanent Central Opium Board, *op cit.*

[15] This 1950 figure is higher than those for 1949 and 1948 and lower than that for 1947, a year when pethidine was still little used. The date selected is one which *brings out* the decline in the use of morphine and does not minimize it.

There was thus a fall in morphine consumption of about 500 kg, offset by a consumption of 11,413 kg of pethidine and 553 kg of methadone.

Although the doses for administration of these three products are not identical, the 553 kg of methadone alone largely offsets the 500 kg decline in morphine consumption.

Hence, it would not be far from the truth to say that *practically* speaking the consumption of pethidine has come to be purely and simply superimposed on that of morphine.

It can therefore reasonably be claimed that the appearance of synthetics has increased the licit consumption of narcotic drugs.

There is nothing surprising about this, for it usually happens that when the number of articles of consumption is increased total consumption increases too.

But there are other special reasons for the increase in the case of synthetic drugs. It is a *fact* that a certain proportion of doctors are less aware of the addiction-producing properties of synthetic analgesics than of those of natural ones —indeed, some may even be said to be totally unaware of them.

The Expert Committee of the World Health Organization, realizing this danger, expressed the opinion [16] that the growth of pethidine addiction can be combated only if its use be undertaken with full realization of its danger, and its administration attended by the same precautions as are recognized for morphine.

The need for special measures in the case of synthetic drugs had not escaped the notice of WHO, since the Expert Committee, in its fifth report, asked for the dangerousness of the addiction potentiality of pethidine to be brought to the attention of the medical profession throughout the world.[16]

To set an example, the Ministry of Public Health in France had quite recently to make representations to one of the most authoritative medical journals for having published a study on the therapeutic value of pethidine, in which it referred to the " slight danger " of that substance, without mentioning its addiction-producing properties.

It is difficult to believe that the French medical profession alone is insufficiently informed on the subject, in view of the fact that, thanks to the co-operation of doctors, the number of prescriptions of synthetic drugs has decreased in France since the war.

The paper by R. N. Rasor and H. J. Crecraft [17] shows that the opposite is the case. Indeed, it affords striking proof of the danger to which we have drawn attention.[18]

It is obvious that the 453 cases of addiction to meperidine (a derivative of pethidine) reported by those authors constitute only a small proportion of the number of American meperidine addicts, if only because 416 of them had *volunteered* for treatment.

The fact that the number of synthetic drug addicts is smaller on the whole than that of natural drug addicts *at the present moment* does not warrant the assertion that the danger of synthetic drugs has been exaggerated.

To make such a claim would be to ignore two vital factors : the start which natural drugs had over synthetic drugs and the existence of a large and long-established illicit traffic in heroin.

In view of those facts, the proportion of synthetic drug addicts is already very alarming, as the following figures show : [19]

	Percentage
Austria	10
Belgium	37
France	23
Federal Republic of Germany	41
United Kingdom	16
New Zealand	39
United States of America	6.3

The paper by Rasor and Crecraft confirms the relationship of cause and effect between the therapeutic use of a drug and the addiction to which it gives rise and, hence, *between the volume of licit consumption and the number of addicts.*

According to the authors, " All of the persons interviewed were vaguely aware of the dangers of becoming addicted to meperidine but regarded it as less likely to produce any toxic effects and less likely to produce addiction; if they should become addicted, they believed it would be easier to discontinue the use of meperidine than any of the commoner opiates. Furthermore, meperidine was more readily available; many hospitals take less precaution in safeguarding their supplies of meperidine than their supplies of other narcotics. Many felt that the stigma attached to using meperidine was much less than that attached to the use of opiates and . . . that the observable signs of addiction to meperidine were less obvious to others than the signs of addiction to opiates."

It is instructive to look through advertising matter sent out—in perfectly good faith—by the manufacturers of synthetic narcotics to medical practitioners, and to see how reticent they are about the addiction-producing properties of those drugs.

A medical practitioner who prescribes morphine, oxycodone or heroin must, at this time of day, be aware of the risk he runs.[20]

This does not apply, however, to the new synthetic analgetics offered to him, which he will be inclined to prescribe in cases where he would not prescribe morphine, for example.

It seems to be necessary to stress on every possible occasion the relatively large number of cases of addiction arising from the therapeutic use of drugs.

This fact is brought out in every statistical survey of addiction.[21]

The situation today is the same as it was in 1889, when Dr. Pichon wrote *on the first page of his book :* [22] " For a long time it has been necessary (and even today is most often the real cause of the trouble) to lay the blame solely on *the therapeutic use of drugs.*"

If Pichon's work had received more attention when it appeared, much of the harm done by narcotics could have been averted.

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[16] WHO Technical Report Series No. 95, Geneva 1955, and document C.L.15, 1955, A 2/447/P.3.

[17] Journal of the American Medical Association, 19 February 1955.

[18] For an analysis of this article see VAILLE and STERN, " *Les stupéfiants : fléau social* ", *op. cit.*

[19] Economic and Social Council, Commission on Narcotic Drugs. Summary of Annual Reports of Governments, 1954.

[20] This is one of the reasons why heroin is not prohibited in France, where less than 10 kg are consumed per year, mostly by patients dying of cancer. If it were banned, it would have to be replaced by synthetics at least equally capable of producing addiction.

[21] See Summary of Annual Reports of Governments, *loc. cit.*; and VAILLE and STERN, *Bulletin on Narcotics, loc. cit.*

[22] Dr. G. PICHON : " Le Morphinisme ". O. Doin, Paris, 1890.

In its sixth report, the Expert Committee on Drugs liable to produce Addiction expressed the opinion [23] that " the risk of addiction through the use of synthetic drugs is neither greater nor less than the risk encountered through the use of morphine, related opium alkaloids, or substances derived therefrom ".

It appears, however, from the context, and more clearly still from the oral explanations given at the eleventh session of the Commission on Narcotic Drugs,[24] that this opinion is derived from *scientific experiments on synthetics*, and that the Committee, having discussed in detail the psychological aspects of the problem of synthetic narcotic drugs, reached the conclusion that it should not express any definite opinion within the framework of its specific report and should *avoid overlapping with the Commission's work.*[25]

From a physiological standpoint, the synthetic and the natural products are on the same footing.

The only difference between them is in their psychological and social effects.

(c) *Effect on the illicit traffic*

If judgment on the possible effect of the increasing use of " synthetics " on the illicit traffic is suspended until abundant factual evidence is forthcoming, it will be too late to save the situation.

It has already been observed that some addicts whose condition is due to medical treatment with, for instance, pethidine, satisfy their craving by procuring narcotics of any kind on the illicit market. This fact proves that the new form of addiction is bound to stimulate the illicit traffic, which does not depend entirely on the traffickers; demand is also an important factor.

Experience shows that there will always be persons unscrupulous enough to satisfy the demands of addicts by every possible means, for some of them *create* those demands.

Experienced officials are always very discreet when discussing the illicit traffic. They are sometimes heard to say that they have not discovered any illicit traffic, but *never that it does not exist.*

CONCLUSIONS

Nearly fifty years ago some far-sighted individuals laid the foundation for an international system of control which is an effective weapon against drug addiction.

Their efforts notwithstanding, and despite international co-operation, we still have to deplore the existence of an illicit traffic, the extent of which is merely suspected, and above all the large-scale use of narcotic drugs for illegitimate purposes.

The main reason for this state of affairs is that preventive measures were taken only after the damage had already been done.

The most we can hope is that the growth of this scourge has been checked.

The results achieved may be jeopardized if the use of numerous synthetically-manufactured narcotic drugs is allowed to increase.

Three basic factors are involved :

(1) the number of synthetic drugs;

(2) the increasing volume of their consumption;

(3) the role of therapy in the aetiology of drug addicts.

It seems highly probable that the importance of these factors will increase.

There are two schools of thought about this serious problem.

The first holds that it is enough to make the new drugs subject to the existing provisions regarding narcotics, and considers even a partial prohibition of the use of certain synthetics unwarranted and liable to endanger scientific progress.

The second considers it necessary only to permit the use of such synthetic drugs as are regarded as indispensable for public health, and to prohibit the remainder.

International bodies cannot take the place of national ones in solving the social problems raised by drug-addiction. Their function is to consider from a realistic standpoint what measures are required to prevent the increase of addiction, and to make such recommendations to governments as are calculated to further that end.

Should any Party feel unable to act upon such recommendations, it should none the less, in a spirit of international solidarity, take into account the dangers to which its attitude exposes the other Parties.

That is the idea underlying the proposal to limit the use of synthetics; it is a preventive measure; its application presents no difficulties; it does not affect the treatment of the sick, nor does it hamper scientific research. Nowadays it is relatively easy to produce a new synthetic analgesic; it is more difficult to find one that is not, or is only very slightly, habit-forming. The man who first discovers it will deserve the more credit on that account.

Lastly, as usual where narcotic drugs are concerned, economic factors should be disregarded. We know from past experience that, in this field, economic interests rarely coincide with those of the patients and of the general population.

[23] WHO Technical Report Series, No. 102; Geneva, 1956.

[24] 298th meeting, Provisional Summary Record, p. 5.

[25] Author's italics.

Problems of modern hemp breeding, with particular reference to the breeding of varieties of hemp containing little or no hashish

by G. Bredemann, Fr. Schwanitz, R. von Sengbusch, Hamburg *

Hemp (*Cannabis sativa* L.) is one of the oldest cultivated plants known to man. Its home is in Central Asia. From there the plant came at an early date to China, where it is supposed to have been cultivated for more than 4,500 years. Wild hemp is said still to be gathered to-day, and occasionally also cultivated in its original home. Wild hemp (*Cannabis sativa*) of the variety called *Ruderalis Hanisch*, is distinguished by its strong ramification, the loose build of the flower and fruit stems and its small fruit. The fruit covers are also strongly developed and the fruit falls off easily. Wild hemp has a fibre content similar to that of the varieties of hemp found in central Russia, but its content of valuable long fibres is smaller, probably because of its stronger ramification. There are a great number of varieties as well as transitional forms of wild hemp; but since hemp easily becomes wild, it is difficult to tell whether these plants with the characteristics of cultivated plants are really good varieties of the wild plant, or descendants of cultivated plants which became wild, or even the result of natural cross-breeding between wild and cultivated forms.

It is said that in the 7th century B.C. hemp was brought by the Scythians from Central Asia to the regions north of the Black Sea and the mouth of the Danube, and from there by way of Russia to north and central Europe. Russia and the Baltic States became at an early date one of the most important areas in which hemp was cultivated for fibre. These northern varieties of hemp are distinguished by their low growth and early maturity.

Hemp also spread by way of Asia Minor to the Mediterranean countries, where it has been known since about 450 B.C. A second centre where hemp was cultivated for fibre developed in Italy and France. These southern varieties of hemp are of large growth, and mature late.

The form and yield of the hemp plant are influenced not only by the climate, but also by selective breeding for a specific use. There are special fibre varieties which are cultivated exclusively or mainly for their fibre. These are relatively long or even very long, are not ramified, and yield only small quantities of seed. In addition there are varieties of oil hemp which are of low growth, mature early and yield large amounts of seed. These are grown to obtain fat oils. Finally, some varieties of hemp are cultivated for the sake of the drug hashish. This variety of *Cannabis sativa*, incorrectly referred to as a separate species of *Cannabis indica Lam.* or Indian hemp, is distinguished by its low growth, strong ramification, and small dark-green leaves. Between these three main varieties there are various intermediate forms.

The oldest use of the plant is the production of bast-fibres from the stem. This is said to have been known to the Chinese from about 2800 B.C. The seeds were used for culinary purposes only at a later date. The use of hemp as the source of a drug was apparently unknown to the Chinese. This use seems first to have been discovered in India, where hemp was cultivated for medical purposes as early as 900-800 B.C. In mediaeval times hemp was brought to North Africa, where since then it has been cultivated exclusively for hashish.

The cultivation of the oil-bearing varieties of hemp is of no economic importance. The two main varieties of fibre hemp mentioned above developed as a result of natural selection, which for many centuries went on under varied climatic conditions, and was primarily influenced by very different lengths of day and vegetation periods. There are, of course, all kinds of traditional forms. The northern varieties of fibre hemp need in general—as has been mentioned—a comparatively low temperature and a short period of vegetation. They are accordingly of low growth. The southern varieties require a high temperature and a long period of vegetation, and consequently grow taller. In both types, short days during the principal period of vegetation generally reduce the time of growth and the development of the plant, and promote the reproductive phase (a few exceptions to this rule were reported by Bredemann in 1952). Shorter days impede the growth and advance the blossom. In regard to their photoperiodic reaction, the varieties of hemp which grow in northern and central Europe are adjusted to the length of summer days in that part of the world, and so they complete their development and form mature fruits. Hoffmann (1943) described northern hemp as a " generative type with a strongly developed production of seed ". If these northern varieties are planted in southern latitudes in which the summer days are shorter, or if they are cultivated in our part of the world (e.g., in Germany) in the greenhouse in winter, the plants develop much faster from planting to blossom; but they blossom very quickly, and complete their growth so soon that they yield little straw and fibre; consequently, the cultivation of these varieties under such conditions would not be a paying proposition.

Most of the southern varieties, on the contrary, are adapted to the short days of the southern summer. Hoffmann refers to them as " plant types with a low seed yield ". If they are cultivated in the long days of central Europe, they develop and grow very well, but they blossom and bear fruit so late that it never ripens. In special cases, if varieties adapted to the length of day in very low latitudes are brought to the

* The following worked as a team in the treatment of all the hemp problems discussed in this paper : Bredemann (Hamburg), Garber (Hamburg), Huhnke (Hamburg), Neuer (Krefeld), Schwanitz (Hamburg), and von Sengbusch (Hamburg).

north, even the bast-fibre does not ripen, the fibre content of the stem remains low, and the fibre is of inferior quality.

When there were only very limited international economic relations, each country obtained the seed it needed from its own plants. Therefore, particularly in central and northern Europe, the seed harvest often failed, as a result of bad weather, because the fruit did not ripen sufficiently. The present economic development towards the use of large spaces, the result of international co-operation, makes possible a much better cultivation of hemp. Since as a rule shorter days help and accelerate the blossom and the fruit, it seems desirable that the seed should be produced in the south. This has another advantage, for southern varieties of well-developed growth can be cultivated in central and northern Europe, and although it is true that the seeds of these varieties do not ripen in that part of the world, they can still yield large amounts of high-quality fibre.

Although hemp is a very old cultivated plant in great parts of Europe—except Russia—it has only recently been grown on a sizeable scale, and consequently has not been changed much by breeding. Only its time of maturing and its length of growth have been adjusted to different climates by the joint effect of natural selection and very limited artificial breeding.

The lack of systematic work on hemp has had the result that until very recently hemp could only be described as a wild plant cultivated by man, rather than as a genuine, cultivated plant.

Accordingly, hemp has, or at least until recently had, a number of the unfavourable characteristics of wild plants. They are

(1) dioeciousness, which owing to the early death of the male plant results in the fibre becoming uneven and of considerably lower quality;

(2) low fibre content, as a rule around 10%;

(3) unevenness of the fibre, from the existence side by side of primary and secondary fibres of very unequal quality;

(4) the presence of extraneous matter, principally resins exuded by the glandular cells, more especially of the female inflorescence. These resins contain narcotic substances, which are misused in the form of the drug called hashish (marihuana).

These unfavourable properties, especially the low fibre content and the loss of fibre and the poor quality caused by dioeciousness, have led, despite its advantages, to a world-wide decline in the cultivation of hemp at the very time when agricultural production has been on the increase. As explained, this is due to the low yield of the wild hemp plant.

Bredemann (1924) made experiments designed to increase the fibre content of the plant by means of a special breeding process—namely, the elimination before flowering of all male plants of low fibre yield. In this way he succeeded in breeding a plant which had a fibre content twice that of the original plant—i.e., about 24% instead of 12%.

Experiments were started by Neuer in Germany in 1934 to eliminate the dioeciousness found in wild plants. These experiments were later continued in collaboration with von Sengbusch. A monoecious variety of hemp was bred—that is to say, a plant always possessing both male and female blossoms. In these new monoecious varieties of hemp, all plants blossom simultaneously. A plant has been bred which no longer has the decreased yield and low fibre quality found, owing to the early death of the male plants, in dioecious hemp.

These two new strains did not, however, prove at all satisfactory in their yield. This applies equally to the strain with an increased fibre content (bred by Bredemann) and to the monoecious hemp. In quality as well as in quantity of yield, they still showed a number of weaknesses which had to be overcome if the cultivation of hemp was to be worth while. The two groups of workers combined in 1950, therefore, to continue jointly the work on the breeding of hemp.

The next aim in the breeding process was to try to combine monoeciousness and ample fibre content, as well as to create useful monoecious and dioecious varieties of ample fibre content for the different districts in which hemp is cultivated. First, the special characteristics of existing varieties were studied, primarily to find weaknesses which should be overcome by breeding. After this preliminary examination, cross-breeding was started as follows :

(1) monoecious plants of low fibre content with dioecious plants of high fibre content;

(2) dioecious plants of low fibre content with dioecious plants of high fibre content;

(3) dioecious plants of low fibre content and late maturity with dioecious plants of high fibre content.

In each case considerable progress was made. Field work in Germany, France, the Netherlands and Sweden on the fibre yield of the new monoecious and dioecious stems showed that an average net fibre yield of 2,000 to 2,500 kilograms per hectare could be reached from a straw harvest of 10,000-12,000 kilograms per hectare, and a fibre yield of 20-22% by chemical process, which means a fibre yield of 24-25% by natural retting.

In the course of this work, methods were also developed for the separation of the valuable primary fibres from the less valuable secondary fibres. These processes facilitated the selection of varieties with a particularly high content of primary fibres. By continuous selection carried on for a period of three years it became possible to increase the content of primary fibres to about 70% of the total fibre content. Through this work the hemp plant was changed in about 25 years from a cultivated wild plant to a genuine cultivated plant and its cultivation thus made profitable.

There remains the problem of improving the quality of the fibre by breeding. It has already been attacked by the working group referred to above and, in view of the success already achieved, its solution can be expected in the predictable future.

Another remaining problem is that of improving the process by which the fibres are produced, and more especially of changing them to match the increased fibre content of the new strains.

Methods of cultivation suitable for the new strains must also be developed. The question of which districts would be most suitable for such cultivation has to be studied, and also the economic advantages of increasing the cultivation of the new strains compared to those of other important cultivated plants.

Lastly there remains another very important problem which can be solved only by actual breeding : the elimination or reduction of the hashish content, which has remained the same in the cultivated as in the wild varieties. The breeding

of varieties of hemp which contain little or no hashish is essential, because even the fibre hemps can produce so much hashish on their female inflorescence that they can be misused for producing narcotics (Adams, Pease and Clark 1940, Ball 1910, Hamilton 1915, Hitzemann 1941, Matchett, Levine, Benjamin and Pope 1940, Paris and de Merac 1948, Pascal 1917, Pulewka 1950, Robinson and Matchett 1940, Sabalitschka 1925, 1927, Straub 1928, Walton, Martin and Keller 1938). This danger can be overcome only by breeding varieties which contain little or no hashish.

Hashish is the resin produced by the glandular hairs of the female inflorescence. This resin contains at least three chemically-related substances: Cannabinol, Tetrahydrocannabinol, and Cannabidiol.

Of these, cannabidiol, found in the greatest quantity, has no narcotic effect; cannabinol is weak or inactive; but tetrahydrocannabinol, a derivative of cannabidiol, is the principal narcotic agent (Todd 1942, 1940; Bergel 1938; Adams, Pease, Cain, Clark 1940; Adams, Pease, Cain, Baker, Clark, Wolff, Wearn, 1940; Bose 1943; Wollner, Matchett, Levine, Loewe 1942).

Modern plant research suggests that it must be possible to eliminate these undesirable narcotics by breeding. Von Sengbusch succeeded, decades ago, by means of appropriate chemical selection processes, in finding mutants in five varieties of the lupin plant, which had a low alkaloid content and were therefore not poisonous, and in developing from these mutants corresponding varieties of sweet lupins. By succeeding in finding three different mutants of the yellow lupin *(Lupinus luteus)* and two different mutants of the blue lupin *(Lupinus angustifolius)*, he proved not only that it is possible by systematic research into a great number of plants to find individual strains which do not contain substances once considered characteristic of the species, but also that individual plants free of such substances can be produced by the mutation of different genes. Von Sengbusch also succeeded, by systematic selection, in breeding a strain of tobacco *(Nicotiana tabacum)* which contained little nicotine. Furthermore, Von Schwanitz and von Sengbusch have already obtained good results in their most recent work in selecting varieties of spinach containing a low content of oxalate and saponine. Other research workers have succeeded in finding varieties of Sudan grass with a greatly decreased amount of glucosides containing hydrocyanic acid, and varieties of melilot which contain no coumarin. This all goes to show that it is certainly possible to eliminate, through selection and breeding, secondary plant substances characteristic of a particular plant species.

When von Sengbusch bred the sweet lupin he succeeded not only in reducing the high alkaloid content by finding suitable mutants, but also in making cultivated plants from the wild varieties of the lupin by a systematic search for other characteristics of cultivated plants, such as firm adherence of the pods to the stems, soft covers and white colour of seeds, fast development of the young stages of the plants, etc. (von Sengbusch: "20 years' sweet lupin research and breeding in Germany", Forschungen und Fortschritte 21/22, Jg.Nr.22/23/24, Nov. 1947). As mentioned above, he has successfully started similar work on hemp with other research workers. He is therefore particularly anxious to attempt to eradicate the last important wild characteristics of hemp by breeding methods similar to those with which he succeeded in reducing the alkaloids of lupins and tobacco.

In the last few years, preliminary experiments in breeding hemp plants with a low hashish content have therefore been started by the authors of this paper in collaboration with W. Huhnke in the Department for the Breeding of Cultivated Plants of the Max Planck Institute for Breeding Research.

The starting-point was the knowledge gained in examining, by paper chromatography, a large number of individual planys, clones and varieties of fruit and vegetable species. It had been clearly shown that important factors in the quality of the fruit—such as sugar and acid content—were complex attributes which themselves had several different characteristic elements. In several edible fruit species, glucose, laevulose, saccharose and other kinds of sugar are found side by side. In some species considerable variations are found in the proportions of the different kinds of sugar; and indeed some of the varieties of sugar are sometimes absent. Such differences can also occur within one and the same species; varieties and clones of strawberries are distinguished not only by the amount of the different kinds of sugar they contain, but by the entire absence of some of these sugars, such as glucose. This is because the various types of sugar are formed, or the more complex sugars are synthesized from basic sugars in the plant in genetic and biochemical independence of one another; consequently, saccharose is lacking on account of one particular mutation or combination of genes, while quite different mutations are required to prevent the production of laevulose.

Three different components can also be found in hashish. Judging by experience with the lupin and other cultivated plants, it will be possible to breed varieties of the Indian hemp plant which have no—or at least very little—hashish. The fact that hashish contains three different substances shows the way that has to be followed in breeding. It would not be advisable to search only for mutants in which all three components of hashish are missing. Our findings concerning the different types of sugar in the clones of strawberries suggest that mutants which lack only one of the hashish components will be found more frequently than mutants or combinations which lack all three. The best method is therefore to look first for mutants which lack only one hashish component. By cross-breeding these it should be possible to produce strains which lack all three.

In examining large quantities of plant material, the Beam test can be employed for the determination of cannabinol and the Diazo test for that of cannabinol. If these tests are supplemented when necessary by paper chromatography, and their results are statistically treated, they should enable the required mutants to be found. A suitable method of quick determination of tetrahydrocannabinol has still to be developed.

It was known from the beginning that, in addition to the breeding of varieties of hemp which do not contain narcotic substances in the resin exuded by the glandular hairs of the blossom region, there must be yet another possibility of breeding hashish-free hemp. If the glandular hairs are the only organs which produce hashish, it must be assumed that mutants which do not have these glandular hairs are completely hashish-free. By a systematic search for morphological mutants of this nature it may be possible to find varieties of hemp which are completely free of hashish.

Special investigations undertaken in the winter of 1954/55 on about 20,000 individual plants, a very small quantity for such experiments, have already indicated that this assumption

is correct and that the selection process developed is suitable. Out of 20,000 plants examined by the Beam test, about eighty showed no reaction. These plants were then examined by the Diazo test for lack of cannabinol. It was found that about a quarter of the plants which gave no reaction under the Beam test also gave none under the Diazo test. It is therefore clear that, even among such a small number of plants, some lack several components of hashish. It is not yet possible to say whether plants which show no reaction under the Beam and Diazo tests are also free of tetrahydrocannabinol. It seems likely, however, that further experiments will detect such plants.

The selection of plants which lack glandular hairs has also been successful. A sort was found with a sector, obviously changed by somatic mutation, free of glands and giving no reaction under either the Beam or the Diazo tests.

The results achieved in selection clearly show that the method offers hope that hashish-free varieties of hemp can be bred. Whether this can actually be done depends solely on means. Although it has been shown to be possible to develop effective large-scale methods of finding hashish-free plants, their further development and improvement is necessary. Finally, the hereditary stabilization from and the breeding of hashish-free varieties still involve a number of technical problems, the solution of which will be time-consuming and expensive. These difficulties principally arise from the fact that the hashish content can only be determined on the flowering plant and, secondly, that the hemp plant is heterogamous. Since male plants do not produce hashish, it cannot yet be determined whether the male plant inherits the character of freedom from hashish. It will therefore be necessary to develop longer and more complicated breeding processes in order to obtain dioecious hemp strains in which all female and male plants have this desirable character.

The process of selecting and breeding monoecious varieties is somewhat simpler, since the hereditary character of the hashish content of each plant can be determined without difficulty. Here the difficulty in breeding is that, once a plant has been ascertained to be hashish-free, it can be assumed that the seeds of this plant have already been fertilized by the pollen of another plant with the hereditary character of containing hashish. If it is desired to obtain hashish-free varieties as quickly as possible, it will be necessary to employ the pruning method developed by von Sengbusch, in order to make the same plants flower twice—once to select the hashish-free varieties, and again to cross-breed hashish-free plants.

To carry out this breeding work would require considerably more effort and means than were necessary for the first preliminary experiments so far made. It is impossible to carry out the further necessary experiments—like the previous ones—alongside and at the expense of other important tasks.

The selection of monoecious plants with high quantity and quality of fibre has cost about 30,000 marks par annum for twenty-five years. This means that so far about 750,000 marks has been spent on transforming the wild hemp plant into a genuine, cultivated plant. It may be assumed that ten more years of breeding will be necessary to improve the quality of the hemp fibre, at a probable additional cost of 200,000 or 300,000 marks.

There will also be the expense of breeding hashish-free hemp plants. It will be necessary to work out or develop methods quickly determining the three substances to be eliminated. These methods must be suitable for breeding purposes. It will probably be necessary to examine several million individual plants. It will also be necessary to develop processes of genetic breeding in order to stabilize the mutants found, and to breed by these methods, which will probably be very complicated, new varieties which will yield large amounts of fibre and at the same time be hashish-free. This breeding work will probably require ten to fifteen years, and cost about 30,000 marks a year.

The transformation of *Lupinus luteus* from its wild form into a cultivated plant has taken place before our eyes in the last thirty years. A great number of undesirable qualities of the wild form have been eliminated by the selection of suitable mutants. Similarly, important bad qualities of the wild form of hemp have been eliminated during the last twenty-five years; and as a result we have today monoecious as well as dioecious varieties with a very high yield of primary fibre. These high-quality varieties of hemp can, however, only become real cultivated plants through the breeding of varieties which could not be misused by producing narcotics. The results obtained with these two plant species (lupin and Indian hemp) justify an optimistic belief that the breeding of hemp plants which have no or very little hashish is possible. It is desirable from the standpoint of public health that ways and means should be found for achieving the aims of the research outlined in this paper.

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Use and need of new synthetic analgesics in obstetrics; Demerol : an example

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In the field of obstetrics the recent availability of such powerful synthetic analgesic agents as mepiridine, methadone and numerous others makes possible a broader perspective of the pharmacologic factor in labour. The growth of such knowledge depends to a considerable extent upon the number and variety of synthetic agents that attain a status to command clinical investigation. From this standpoint, it is evident that analysis of the labour mechanism can progress at a rate which is related closely to that of the output of new and interesting obstetric synthetic agents. For a more rational control of the outcome of labour the evidence obtained by the comparison of the effects of an ever-increasing variety of drugs is imperative.

A dose of a drug that is insufficient to be toxic to the mother may have serious effects upon the labour mechanism and the fœtus. The difficulties of achieving uniformly satisfactory obstetrical analgesia are well recognized. Morphine in doses capable of relieving pain in active labour can influence the progress of the labour mechanism. The intervals between uterine contractions tends to be increased under the influence of morphine. Morphine is known to influence the progress of labour in other ways, by depressing maternal and fœtal respiration and reflex irritability. We must preclude the acceptance of obstetric analgesic agents which involve dangers of toxic, irritating, or undesirable side-effects disproportionate to their therapeutic value.

Demerol (meperidine) has enjoyed considerable use as an obstetric analgesic agent. Demerol has been used for the past fifteen years at the Boston Lying-in Hospital, an institution which has approximately 6,000 deliveries annually. The drug was selected because the action of this agent is better known than that of other synthetic analgesics. Recently a series of 3,000 cases was carefully studied, in which Demerol was used in labour. It became clear that Demerol, like other agents, is not able to meet all the requirements necessary for safe, controllable and effective obstetrical amnesia and analgesia; yet this drug possesses certain advantages over morphine and other analgesic agents in obstetrics. This emphasizes the fact that there is definite need for the synthesis and development of new superior agents for the field of obstetrical analgesia.

Demerol was administered parenterally in dosages of 10 to 100 mgms. at intervals of two to four hours; the larger doses at less frequent intervals. Demerol employed alone was found to be lacking in amnesic effect. When combined with scopolamine, it can produce satisfactory amnesia-analgesia in over 90% of the mothers during labour. Demerol must be combined with scopolamine if amnesia as well as analgesia is desired. It is thought that Demerol has a more discrete locus of action as compared to morphine, Demerol acting on the higher cortical centres, whereas morphine is presumed to act on all levels of the cerebrospinal axis.

The course of labour is favourably influenced, and uterine contractions are not adversely altered under Demerol administration in the regimen employed. The average length of labour under Demerol-scopolamine was shorter than the average unpremedicated patient. Demerol does not appear to influence the normal postpartum involution of the uterus, while blood loss during delivery was normal except in those instances of known trauma.

Demerol was originally thought to be a spasmolytic substitute for atropine, but it was soon realized hat the drug possessed analgesic potency. Demerol possesses greater activity when compared to morphine in suppression of secretory activity. Demerol has definite antihistaminic action when compared to morphine. Demerol is known to relax bronchial spasm induced by histamine and other bronchospastic agents.

Demerol is believed to have an antispasmodic action when compared to morphine. The smooth muscle of the colon is uniformly rendered spastic with morphine, whereas it is either unaffected or relaxed by Demerol. Demerol, unlike morphine, does not alter bowel habits nor cause constipation. Unlike morphine, Demerol does not cause urinary retention. Demerol does not alter rhythmic uterine contractions when administered in the dosage plan referred to and when labour is established.

Maternal respiration is rarely depressed by Demerol, but is quite uniformly depressed by morphine. This is a distinct advantage of Demerol over morphine in obstetrics. Respiratory embarrassment of the new-born is quite evident under the influence of morphine as compared to Demerol. Unlike morphine, Demerol does not depress the cough reflex. Demerol possesses the potentiality of respiratory depression when administered in toxic doses or by the intravenous route. We have employed Demerol intravenously but do not recommend this route of administration for ordinary use because of the increased incidence and severity of undesirable effects.

We gained the impression that Demerol has the capacity of an antipsychomotor agent during labour; it possesses distinct analgesic potency; it provides psychic sedation with little euphoria as compared to morphine; it will not depress respiration to the same degree as compared to morphine; it is more effective as a secretory depressant as compared to morphine; it possesses more relative freedom from toxic reactions and unfavourable side effects than morphine; and

it is relatively less depressant than morphine. The combination of Demerol and scopolamine possesses distinct merit over the combination of morphine and scopolamine as an obstetric analgesic therapeutic procedure.

Demerol points up the importance of the further development of better analgesic agents for obstetrical usefulness. Fresh impetus to the synthesis of new drugs for obstetric use is the introduction of highly effective narcotic antagonists. That an opiate antagonist such as Nalorphine should prove to be equally effective against Demerol illustrates strikingly the unexpected turns in the path towards new knowledge in this field.

The demonstration that the modern chemist and the pharmacologist could produce compounds equal or superior in therapeutic value to the natural opiates has stimulated vigorous research. These efforts should be encouraged and stimulated, for there are examples in which drugs of totally different chemical structure possess similar actions. A comparison of the structures of nitrous oxide and Demerol would hardly lead one to believe that they may have certain pharmacological actions—the production of analgesia—in common. Several of the newer synthetic analgesics are even more potent than morphine.

All of this should encourage the efforts of synthetic chemistry to evolve new drugs with distinct improvements over the existing analgesic agents. It is imperative to keep all channels open to the finding of safer synthetic analgesic agents with clinical advantages over morphine in obstetrics.

Influence of the conditions under which the poppy is grown on the alkaloid content of the opium obtained

by T. N. Ilinskaya and M. G. Yosifova

The following two articles have been transmitted by the Representative of the U.S.S.R. on the Commission on Narcotic Drugs.

There is now a large body of published data showing that the chemical composition of plants is subject to considerable fluctuations according to the geographical area in which they grow or are cultivated. N. N. Ivanov (7, 8), M. I. Knyaginichev (10) and others have established, for example, that there is an extremely wide variation in the albumen content of wheats cultivated in different areas, as may be seen from the following figures :

Type of wheat	*Where cultivated*	*% albumen*
Lutescens 0.62	Chelyabinsk Province	24.4
„	Minsk Province	9.8
Kanred	Rostov Province	19.3
„	Ukrainian SSR	8.6

The work of S. L. Ivanov (4, 5, 6) on fatty vegetable oils is well known. He has established that oleaginous plants have a higher oil content when grown in the north than when grown in the south. Thus white mustard contained 37.4% fatty oil at Kotlas, and 18.9% at Kharkov. In addition, the oils obtained in the north have a higher degree of non-saturation, as is shown by the higher iodine counts.

For example, linseed oil from Archangel had an iodine count of 195 as against 180 for Moscow and only 154 for Tashkent.

V. V. Arasimovich (1) says that the sugar content of the ichksyl variety of melon is 6.9% in the central Volga region, and 11.7% in central Asia. Tomatoes grown in Moscow have a 2.9% sugar content, and those grown in the Crimea 5% (13, 18).

The starch content of Soviet varieties of potatoes ranges from 14% to 24% (14). Furthermore, the quality of the produce differs in different years in the same district. Thus during nine years of cultivation the sugar content of Voltman potatoes ranged from 14.4% to 22.7%.

Kok-saghyz roots grown in Leningrad Province contained 7.12% of rubber and those grown in Kazakhstan 4.63% (12).

Considerably less study has been devoted to the effect of the district in which plants are grown on their content in alkaloids, glycosides, essential oils, etc., but the available data show that the content in these substances is also subject to appreciable fluctuations.

According to A. A. Shmuk (15, 16, 17), the nicotine content of makhorka varies from 1.5% to 8% according to the district in which it is grown. The alkaloid content of the lupin ranges from 0.83% to 1.6%. In his work on the influence of geographical factors on the morphine content of the opium poppy, Annet (20) concludes that districts of high and low morphine content may be distinguished. This is confirmed by Wisner (23), who states that the morphine content of the opium poppy in different countries fluctuates between 2% and 15%.

The alkaloid content of cinchona bark depends on the height above sea level at which the tree is grown. The amount and composition of quinine alkaloids is shown by Howard's data (see Reimers, 22) :

Height above sea level in metres	*Quinine*	*Quinidine*	*Cinchonidine*
500	0.47	0.30	0.05
1,800	2.06	traces	3.47

According to A. I. Yermakov (2, 3), hoary erysimum *(Erysimum canescens)* grown in Moscow Province and picked at flowering time contained 1.1% glucosides, as against 1.8% for plants picked in Poltava Province.

It is also known that there are variations not only in the amount of alkaloids but also in their composition according to the conditions under which plants grow.

S. Yunusov (19) says that Japanese chemists have found the alkaloid coclaurine in the evergreen shrub *Cocculus laurifolius*. Grown in the Batum Botanical Gardens, this plant contained no coclaurine at all but on the other hand it was found to contain two new alkaloids of an entirely different structural type.

There is a reference in Henry (21) to the effect that *Duboisia myoporoides* contains alkaloid in the basic form of scopolamine in the northern districts of Australia and hyoscyamine in the southern districts.

* * *

The All-Union Institute for Scientific Research on Medicinal and Aromatic Plants (VILAR) has for a number of years been making geographical sowings of three varieties of the opium poppy : Tarbagatai 20, Tian-Shan 27 and China 42.

The sowings were made in a uniform manner as regards choice of plot, preparation of the soil, sowing conditions and tending.

According to the instructions, the poppy was sown in furrows directly in the soil, during the first two or three days after field work began. Sowings were made in double drills with 60 and 30 cm. between the rows, the seeds being covered to a depth of 1.5 to 2 cm.

The experimental plots were set at 100 square metres, and the experiments were repeated not less than three or four times.

Observations were made during the growing period to check the length of the individual development stages and

Table 1

CONTENT IN THE FIVE MAIN ALKALOIDS AND TOTAL ALKALOIDS CONTENT OF OPIUM FROM POPPIES GROWN IN DIFFERENT DISTRICTS — 1947

District where grown	*Variety*	*Percentage of alkaloids content of opium*					*Total for all alkaloids*
		Morphine	*Codeine*	*Papaverine*	*Thebaine*	*Narcotine*	
Krasnodar	Tarbagatai 20	13.10	1.49	0.41	0.67	5.68	34.20
»	Tian-Shan 27	13.00	1.00	0.48	1.32	3.30	36.90
»	China 42	13.50	1.27	traces	0.54	12.30	34.30
Voronezh	Tarbagatai 20	10.40	1.79	traces	1.30	7.50	42.30
»	Tian-Shan 27	8.18	1.25	0.70	0.83	4.70	33.90
»	China 42	10.20	1.62	0.40	2.30	6.10	38.70
Bitzy, Moscow Prov.	Tarbagatai 20	12.00	2.30	0.17	1.10	6.00	37.50
» » »	Tian-Shan 27	8.00	2.20	0.15	1.92	8.40	38.00
» » »	China 42	9.48	2.10	0.10	2.10	4.50	35.00
Vologda	Tarbagatai 20	10.40	2.17	none	0.81	8.40	40.70
»	Tian-Shan 27	5.50	2.60	none	0.86	4.00	36.80
»	China 42	6.60	2.53	none	1.50	6.30	41.60

measurements were taken of the height of the plants and the degree of foliation. In addition, specimen plants were selected from each plot, before the crop was harvested, in order to measure the increase in organic mass.

The crop was gathered in the form of opium, to obtain which the capsules were lanced with special knives. The lancing was done during the period of initial technical maturity in 15-20% of the opium-yielding capsules. They were repeated four or five times every other day. On each occasion only technically ripe capsules were lanced. The opium was collected the day after lancing, dried, pulverized by grinding in a mortar and then analysed for content in the six main alkaloids by Klyachkina's method (9), and for total alkaloid content by the method devised by the VILAR's Chemistry Department (11).

The tests results are given in Tables 1, 2 and 3. As regards the alkaloid narceine, it occurred only in traces in all the samples, and hence no figures are given for it.

The first thing to be noted is the exceptionally wide variation in the content in the main alkaloids of opium obtained from poppies grown in different geographical areas. The morphine content, for example, ranges from 5.50% to 13.50%, codeine from 0.36% to 2.60%, papaverine from zero to 2.30%, thebaine from 0.14% to 7.00%, narcotine from 4.00% to 12.30% and total alkaloids from 26.3% to 41.6%.

The districts in which the poppy was grown were, in order of latitude, Krasnodar, Voronezh, Moscow and Vologda (see Table 1).

Proceeding from Krasnodar to Vologda, the morphine content decreases and this is particularly noticeable with the Tian-Shan 27 and China 42 varieties. The codeine content decreases in the other direction, from Vologda to Krasnodar.

Comparing the soil and climatic conditions under which the poppy was grown in these districts, it can be said that from south to north the natural fertility of the soil and total temperature during the growing period decrease. Total rainfall is much the same in all these districts, but its effect is necessarily different because of the great differences in temperature. Clearly, the changes in the humidity/warmth ratio, and in soil conditions are responsible for this variation in the morphine and codeine content of the opium.

West of Vologda, poppy was grown in the Tartu district (Estonian SSR) and east of Vologda in the Kirov district (see Table 2). In the mild, damp, warm climate of Tartu, the opium has a higher morphine content and a lower codeine content than in Vologda. On the other hand, with the low temperatures in the Kirov district, the morphine content is lower and the codeine content higher.

Sowings were also made west of Krasnodar, in Poltava Province (Table 3) and east of Krasnodar, in Kuibyshev Province. It can be said of the opium from these districts that it has a lower codeine content than that from the more northerly districts.

In a number of districts, the geographical poppy sowings were continued over a period of years, and the results of these experiments show that in the same district the composition of the opium was not uniform where weather conditions

Table 2

District where grown	*Variety*	*Percentage of alkaloids content of opium*					*Total for all alkaloids*
		Morphine	*Codeine*	*Papaverine*	*Thebaine*	*Narcotine*	
Tartu	Tarbagatai 20	13.10	1.58	0.94	0.67	5.68	34.20
»	Tian-Shan 27	11.20	1.95	0.53	0.58	8.70	40.10
»	China 42	13.28	0.90	0.17	traces	6.70	39.80
Kirov	Tarbagatai 20	11.40	2.30	0.01	0.30	6.00	39.50
»	Tian-Shan 27	10.50	2.20	0.27	1.10	12.20	40.10
»	China 42	11.10	2.00	0.10	1.60	10.10	39.80

Table 3

District where grown	Variety	Percentage of alkaloids content of opium					Total for all alkaloids
		Morphine	Codeine	Papaverine	Thebaine	Narcotine	
Poltava Province	Tarbagatai 20	10.60	1.39	0.31	1.30	6.50	31.00
„ „	Tian-Shan 27	7.80	1.30	0.30	—	9.96	36.10
„ „	China 42	7.85	1.05	1.75	1.86	5.20	26.30
Kuibyshev Province	Tarbagatai 20	11.10	1.57	1.08	0.14	8.4	26.90
„ „	Tian-Shan 27	9.60	1.06	1.78	traces	4.90	40.30
„ „	China 42	10.50	0.36	2.30	none	6.60	36.90

Table 4

PERCENTAGE OF MORPHINE AND CODEINE CONTENTS OF ABSOLUTELY DRY OPIUM

No.	District where grown	Year when grown	Tarbagatai 20		Tian-Shan 27		China 42	
			Morphine	Codeine	Morphine	Codeine	Morphine	Codeine
1.	Tartu	1946	9.40	2.80	7.28	2.24	8.20	2.40
	„	1947	13.10	1.58	11.20	1.95	13.28	0.90
2.	Bitzy, Moscow Province	1947	12.00	2.30	8.00	2.20	9.48	2.10
	„ „ „	1949	14.20	1.80	12.50	1.50	9.10	2.40
	„ „ „	1950	14.26	1.80	—	—	—	—
	„ „ „	1951	11.74	2.13	—	—	—	—
3.	Voronezh	1945	14.50	1.13	11.10	0.95	14.35	0.60
	„	1947	10.40	1.79	8.18	1.25	10.20	1.62
4.	Krasnodar	1946	12.34	2.04	10.40	1.60	13.60	2.20
	„	1947	13.10	1.49	13.00	1.00	13.50	1.27
5.	Kuibyshev	1945	10.20	1.88	8.10	1.86	10.10	1.50
	„	1947	11.10	1.57	9.60	1.06	12.20	2.0

differed during different years : where a higher morphine content occurred in any one year, the codeine content of the opium was usually lower, whereas a decrease in morphine content was accompagnied by an increase in the codeine content (see Table 4).

In view of the close genetic relation between morphine and codeine, it can be assumed that reciprocal conversions of the one alkaloid into the other are possible, depending on the conditions under which the poppy is grown. Observations have shown that deficient moisture during the early period of growth, or excessive moisture in the latter half of the development period, generally have the effect of reducing the morphine content of the opium.

As regards papaverine, a point to be noticed is that opium from Vologda contained none of it whatever (see Table 1), whereas opium from Kuibyshev, according to data over a three-year period, had a very high papaverine content (Table 5).

Table 5

	Percentage of papaverine content of opium		
	Tarbagatai 20	Tian-Shan 27	China 42
Kuibyshev 1945	1.43	1.74	2.60
„ 1946	1.30	1.30	1.00
„ 1947	1.08	1.78	2.30

The Kuibyshev district compared with the others has a small amount of rainfall and fairly high temperatures during the growing period. Under these conditions, the plants experience a shortage of moisture, and this apparently promotes the formation of papaverine in the opium. This assumption s confirmed by the following data (Table 6).

The years 1946 at Krasnodar and 1950 at Tartu were hot, dry ones, whereas 1947 and 1951 were very wet.

So far it has not been possible to establish any clear principles governing changes in the thebaine and narcotine contents of the opium.

The total alkaloids content of the opium is a little higher in northern districts than in southern ones, but it cannot be concluded from this that alkaloids form more readily in the northern districts, seeing that the absolute yield of alkaloids is considerably greater in the south owing to the heavier opium crop.

Conclusions

1. The percentage content in the six main alkaloids and the total alkaloids content of the opium are subject to variation according to the soil and climatic conditions of the district where the poppy is grown.

2. The morphine content decreases from south to north, according to the latitude in which the poppy is grown; the codeine content and the total alkaloids content change in the opposite direction, while the absolute yield of alkaloids is higher in the south owing to the heavier opium crop obtained there.

Table 6

District where grown and year	Percentage of papaverine content		
	Tarbagatai 20	Tian-Shan 27	China 42
Krasnodar 1946	1.54	0.59	1.25
„ 1947	0.41	0.48	traces
Tartu 1950	0.84	0.35	—
„ 1951	traces	traces	—

3. Increased humidity in the first half of the poppy's growing and development period combined with optimum temperatures promotes the formation of morphine.

Lower temperatures promote the formation of codeine. A drop in morphine content as a result of any particular set of conditions is accompanied by an increase in codeine content. Lower humidity in conjunction with higher temperatures stimulates the formation of papaverine (Kuibyshev), whereas no papaverine is formed where temperatures are lower and humidity higher (Vologda).

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The part played by fertilizers in increasing opium poppy yields

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Since 1932, the All-Union Institute for Scientific Research on Medicinal and Aromatic Plants and some of its regional experimental stations have been devoting attention to the question of how to apply fertilizers to the opium poppy grown in the Soviet Union. The bulk of the work has been done by the Przhevalsk Regional Experimental Station in the Kirghiz SSR, where the opium poppy is generally grown on irrigated plots.

The opium poppy is grown in Kirghizia, in rotation in succession to winter wheat, after fallow or half fallow (sainfoin). Sowings are made in early spring using tractors, seed-drills and sowing in well-spaced rows with 60 to 70 cm. between them. Irrigation is carried out before the land is ploughed (pre-ploughing moisture-charging) and once or twice during the growing period. Final irrigation has to be done not later than the budding stage. Late irrigation when the poppy is in flower has an adverse effect on the yield of raw opium and its alkaloid content. The poppy capsules are repeatedly lanced until the latex stops flowing.

On irrigated plots the Tian-Shan variety is grown, and on those which are not artificially irrigated the Tarbagatai subvariety. The poppy seed is gathered in by means of combine harvesters.

It should be noted that apart from the effect of agricultural methods on the yield and quality of the opium, climatic conditions also play a large part, the result being that yields in different areas may vary considerably although the cultivation methods are the same.

The question of the application of fertilizer to the opium poppy has now been fairly well worked out, thanks to the investigations made.

Both organic and artificial fertilizers have been used, and the experiments lasted from 1932 to 1955.

The results of the experiments to determine the action of organic fertilizers are set out in Tables 1 and 2, and show that the use of manure during ploughing considerably increases the opium yield.

Table 1

EFFECT OF VARIOUS DOSES OF MANURE ON OPIUM YIELD—1932

No.	Test variants	Yield of absolutely dry opium		Percentage of morphine content of absolutely dry weight
		kg/ha	percentage of control	
1.	Control, no fertilizer applied	11.2	100	10.80
2.	Manure, 10 tons/ha	16.1	144	11.58
3.	Manure 20 tons/ha	20.8	186	11.93
4.	Manure 30 tons/ha	20.8	186	11.53

Table 2

EFFECT OF MANURE, WITH BASIC APPLICATIONS—1942

No.	Variants	Yield of absolutely dry opium		
		kg/ha	percentage of control	percentage of morphine
1.	Control, no fertilizer applied	7.85	100	12.31
2.	Manure 20 tons/ha	9.63	123	10.94
3.	Manure, 30 tons/ha	12.9	164	13.36

Table 3

EFFECTIVENESS OF MANURE IN THE SECOND YEAR AFTER APPLICATION—1936

No.	Variants	Yield of absolutely dry opium	
		kg/ha	percentage of control
1.	Control, no fertilizer	8.8	100
2.	Manure, 15 tons/ha	13.5	156
3.	Manure, 30 tons/ha	16.9	192

Table 4

EFFECT OF FERTILIZERS ON OPIUM YIELD AND MORPHINE CONTENT—1937

No.	Variants	Yield of air-dried opium		Percentage morphine content of absolutely dry weight	Morphine yield	
		kg/ha	%		kg/ha	%
1.	No fertilizer	10.08 ± 0.3[illegible]	100	10.1	1.018	100
2.	N_{60} kg/ha	10.75 ± 0.4	106	9.37	1.007	98
3.	P_{60} kg/ha	14.68 ± 0.38	145	10.17	1.483	145
4.	K_{60} kg/ha	8.89 ± 0.30	88	9.68	0.860	84
5.	$(N\ P)_{60}$ kg/ha	13.37 ± 0.50	132	10.51	1.405	138
6.	$(N\ K)_{60}$ kg/ha	8.20 ± 0.27	81	9.18	0.753	74
7.	PK_{60} kg/ha	13.37 ± 0.49	131	10.1	1.340	131
8.	$(NP, k)_{60}$ kg/ha	12.45 ± 0.29	123	9.69	1.206	118

Table 5

EFFECT OF VARIOUS DOSES OF SUPERPHOSPHATE ON OPIUM YIELD AND MORPHINE CONTENT

No.	Variants	Yield of absolutely dry opium kg/ha	Yield of absolutely dry opium %	Percentage of morphine content of absolutely dry weight	Morphine yield kg/ha	Morphine yield %
1.	No fertilizer	11.4 ± 0.2	100	11.40	1.300	100
2.	Pc45 during ploughing	14.08 ± 0.7	123.5	12.54	1.765	136
3.	Pc60 during ploughing	14.47 ± 0.5	127	12.48	1.805	139
4.	Pc75 during ploughing	14.82 ± 0.4	130	12.51	1.854	142
5.	Pc90 during ploughing	13.90 ± 0.8	122	12.32	1.712	132
6.	Pc60 during cultivation	16.07 ± 0.3	141	12.57	2.020	155

With 20-30 tons of manure applied per hectare, the opium yield increased by 22-86%. The poppy comes as the second crop after the application of fresh manure, as the presence of weeds following direct application of manure considerably hampers the poppy sowing. The effectiveness of the manure still remains fairly high during the second year after application.

Experiments to determine the effect on yield of artificial fertilizers have shown that the greatest increase occurs with the use of phosphate fertilizers (Table 4).

Potash fertilizers used both alone or with other fertilizers reduce the opium yield and amount of morphine produced. The use of nitrogenous fertilizers by themselves reduces the morphine content of the opium by 0.73%, but the morphine content increases by 0.4% when they are used with superphosphates.

The reason for this effect of nitrogenous and potash fertilizers is that they were applied during cultivation and their high solubility resulted in a high concentration of salts on the surface of the soil, with an adverse effect on the development of the extraordinarily sensitive poppy shoots.

The correctness of this assumption was confirmed by subsequent tests.

It is first necessary, however, to refer to the tests made to determine the dosage and methods of applying phosphate fertilizers, the results of which are set out in Tables 5, 6, 7, 8, 9, 10, 11 and 12.

Table 6

EFFECT ON OPIUM YIELD OF METHODS OF APPLYING SUPERPHOSPHATE—1937

No.	Variants	Yield of absolutely dry opium kg/ha	Yield of absolutely dry opium %
1.	Control, no fertilizer	14.2	100
2.	Pc 50 kg/ha during cultivation	25.4	179
3.	Pc 50 kg/ha during harrowing	27.6	194

With superphosphate, the opium yield increases from 23 to 94%—in other words, it is almost doubled in some cases. The greatest effect of doses introduced at ploughing time was with 45-60 kg of P_2O_5 per hectare. An increase to 90 kg/ha of P_2O_5 has little effect on the yield.

The morphine content for all the variants of the experiment (Table 5) was practically uniform and worked out at 0.92-1.17 above the control figure. A further point is that the effectiveness of the superphosphate increases where the fertilizer is covered by a shallower layer of soil (see Table 5, Variant 6, and Table 6, Variants 2 and 3).

Similar results were obtained in a second experiment (Table 7).

Table 7

EFFECT ON OPIUM YIELD AND MORPHINE CONTENT OF SUPERPHOSPHATE APPLIED BEFORE SOWING—1940

No.	Variants	Yield of absolutely dry opium kg/ha	Yield of absolutely dry opium %	Percentage of morphine content of absolutely dry weight	Morphine yield kg/ha	Morphine yield %
1.	No fertilizer	4.23 ± 0.11	100	7.15	0.302	100
2.	Pc60 during ploughing	6.53 ± 0.25	154	7.80	0.509	168
3.	Pc90 during ploughing	6.85 ± 0.20	161	7.83	0.536	177
4.	Pc60 during ploughing + Pc30 during cultivation	7.84 ± 0.17	185	7.90	0.629	208

Table 8

EFFECT OF BASIC SLAG ON OPIUM POPPY YIELD—1938

No.	Variants	Yield of absolutely dry opium kg/ha	Yield of absolutely dry opium percentage of control	Yield of absolutely dry opium percentage of morphine	Seed yield kg/ha	Seed yield percentage of control
1.	Control, no fertilizer	6.65	100	12.90	216	100
2.	Basic slag, 30 kg/ha P_2O_5	15.42	231.8	12.78	645	298
3.	Basic slag., 60 kg/ha P_2O_5	21.43	322.3	12.45	838	388
4.	Basic slag, 90 kg/ha P_2O_5	22.15	333.1	11.58	853	395

Table 9

EFFECT OF VARIOUS DOSES OF SUPERPHOSPHATE ON FORMATION OF CAPSULES AND OPIUM YIELD—1937

No.	Variants	Number of capsules cut per 100 plants	Yield of absolutely dry opium in g per count	
			Per 100 plants	Per 100 capsules
1.	No fertilizer	121	14.25	11.77
2.	Pc45 during ploughing ..	143	17.60	12.30
3.	Pc60 during ploughing ..	145	18.08	12.47
4.	Pc75 during ploughing ..	132	18.52	14.03
5.	Pc90 during ploughing ..	130	17.35	13.34
6.	Pc60 during cultivation ..	146	20.08	13.75

The results of this experiment show that the application of 90 kg of P_2O_5 per hectare in two doses—60 kg/ha during ploughing and 30 kg/ha during cultivation (Variant 4) are much more effective than the full dose at ploughing time (Variant 3).

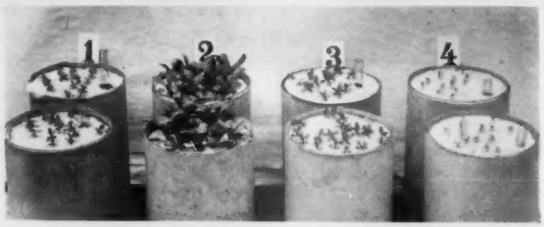
Other types of phosphate fertilizers were tried out, including basic slag, which was also highly effective (Table 8).

The most effective dose of this fertilizer was found to be 60 kg of P_2O_5 per hectare. Concurrently with the sharp rise in opium yield, there was a considerable increase in seed yield. It should be noted that its effect was to reduce the morphine content of the opium, especially where the dose was 90 kg per hectare. However, there is no reason to attribute this decrease to the action of the phosphorus, as the other elements in the fertilizer may have been responsible in this case.

The increased yield consequent on the use of phosphate fertilizers is due to the better development of the plant and the formation of a larger number of capsules and also, as shown by the figures in Table 9, to the increased flow of latex produced by them.

The last-mentioned fact seems to be connected with the effect of the superphosphate on the number of lactic vessels in the capsules and the fact that they are better filled.

The results of the experiments described above prove that the use of superphosphate and other phosphate fertilizers has an extremely favourable effect on opium yield. The results also prove that the effectiveness of phosphate fertilizers increases when they are allowed to come into direct contact with the seed.



PHOTOGRAPH 1

1. No fertilizer
2. $(PK)_{100}$ N 20
3. $K_{100}(NP)$ 20
4. K_{100} N 20

(2 g of each of the active substances = 100)

This last-mentioned fact provided grounds for a further study of this question. Experiments conducted during growth (Photograph 1) show quite clearly that the opium poppy demands a high level of phosphate feed after its initial period of development. Accordingly, the further study of the effectiveness of phosphate fertilizers was directed towards fully covering the initial stage of the poppy's development by means of phosphate feeding.

Experiments were therefore carried out to test the effect of successive applications of fertilizer, the superphosphate being applied in the form of small granules in the drills together with the seed. The experiments showed the application of granular superphosphate in the drills along with the seed at sowing time to be very effective (see Tables 10 and 11).

Table 10 shows that the use of 3 kg of P_2O_5 per hectare increased the opium yield by 36%, while the use of a double dose increased it by 55%. A further increase of the dose to 10 kg per hectare brought practically no increase in yield.

Table 10

EFFECT ON THE PRODUCTIVITY OF THE OPIUM POPPY OF DOSES OF GRANULAR SUPERPHOSPHATE APPLIED IN THE DRILLS—1946

No.	Variants	Yield of absolutely dry opium		Seed yield	
		kg/ha	%	quintals/ha	%
1.	No fertilizer	16.6	100	5.9	100
2.	P_2O_5 3 kg/ha in drills ...	22.6	136	7.1	120
3.	P_2O_5, 6 kg/ha in drills ...	25.7	155	7.2	122
4.	P_2O_5, 10 kg/ha in drills ...	26.4	158	7.6	129

Table 11

EFFECT ON THE OPIUM POPPY YIELD OF APPLICATIONS OF GRANULAR SUPERPHOSPHATE IN THE DRILLS

Year	Variants	Yield of absolutely dry opium		Percentage morphine content of absolutely dry weight	Seed yield	
		kg/ha	%		quintals ha	%
1945	No fertilizer	18.9	100	7.84	7.9	100
	P_2O_5, 6 kg/ha in drills	22.3	118	8.39	9.6	121
	P_2O_5, 30 kg/ha scattered	22.8	120	9.64	10.6	134
1946	No fertilizer	18.5	100	morphine content	5.6	100
	P_2O_5, 6 kg/ha in drills	23.2	125	not determined	8.7	155
	P_2O_5, 60 kg/ha scattered	24.3	131		10.1	180

Table 12

EFFECT OF MANURE AND SUPERPHOSPHATE ON OPIUM AND SEED YIELD

No.	Variant	Yield of air-dry opium kg/ha	%	Seed yield quintals/ha	%
1.	Control, no fertilizer	21.7	100	6.2	100
2.	Pc90	39.4	181	13.0	209
3.	Manure, 15 tons	33.9	156	11.2	180
4.	Manure, 30 tons	31.8	146	11.5	185
5.	Pc90 + 15 tons manure ...	42.0	193	13.2	213
6.	Pc90 + 30 tons manure ...	43.1	198	13.3	214

The greater effectiveness of granular superphosphate applied in the drills at sowing time as compared with powdered superphosphate scattered at random was observed in all subsequent experiments. Thus it can be seen from Table 11 that the opium yield in 18-25% higher in the former case. The same effect is observed when applying 30 kg of P_2O_5 per hectare of ordinary superphosphate, but here the amount of fertilizer used is five times greater.

The results of all these experiments prove that phosphate fertilizers are no less effective than manure.

This is confirmed by the results of yet another experiment (Table 12).

As can be seen from the table, the effect on the opium yield of superphosphate applied in doses of 60 kg of P_2O_5 per hectare exceeds that of manure applied at the rate of 15 tons as well as 30 tons per hectare. Simultaneous application of manure and superphosphate does not significantly increase the opium yield as compared with the application of superphosphate by itself. A similar effect is observed also on seed productivity.

The next step is to examine the results of the experiments on the effect of nitrogenous and potash fertilizers on the opium yield.

Table 13

EFFECT OF NITROGENOUS AND POTASH FERTILIZERS ON OPIUM YIELD

		No fertilizer	N	P	NP
Average for 4 years	Air-dried opium kg/ha	14.3	15.1	20.0	20.9
	%	100	105	139	146

PHOTOGRAPH 2

1. Full dose of mineral fertilizers.
2. Full dose, but nitrogenous fertilizers applied in ½ doses.
3. Full dose, but nitrogenous fertilizers applied in 1/5 doses.
4. Full dose, nitrogenous and potash fertilizers applied in 1/5 doses. Full dose consists of 2 g of active substances (P_2O_5, K_2O, N) per container.

As shown above (Table 4), the application of nitrogenous fertilizers was found to be ineffective whereas that of potash fertilizers reduced the opium yield and morphine content. Even with irrigation the effect of nitrogen fertilizers applied before sowing was very limited (Table 13).

As already noted, the reason why these fertilizers had this effect was because of the formation in the top layer of soil of a high concentration of nitrogenous fertilizers to which young poppy shoots are very sensitive.

To determine the most effective use of nitrogenous and potash fertilizers, experiments were conducted during growing time which showed that the poppy in fact requires less nitrogen and potash feed during the initial period of development (Photograph 2).

However, the opium poppy, to provide a big yield, needs a considerable increase in the amount of nitrogenous feed during the rosette and budding stages, as is confirmed by the experimental results given in Tables 14 and 15.

In addition, the application of nitrogenous fertilizers during the growing period increases not only the opium yield but also morphine content—a most important fact. Potash fertilizers applied at two periods—half a dose when filling the containers and another half at the rosette stage (Table 14) —had a beneficial effect on vegetation but reduced the opium

Table 14

OPIUM POPPY YIELD DEPENDING ON VARYING APPLICATIONS OF FERTILIZER (EXPERIMENT ON GROWING)—1939

No.	Time of application: When filling containers	Rosette stage	Budding stage	Flowering stage	Yield of air-dried above-ground mass: g/container	Percentage (PK_{100})	Yield of air-dried opium: mg/container	Percentage (PK_{100})	Percentage of morphine content of absolutely dry substance
1.	No fertilizer	—	—	—	19.0 ± 0.31	61	210	60	10.85
2.	$(NPK)_{100}$	—	—	—	31.11 ± 0.95	100	350	100	11.33
3.	$(PK)_{100}N_{10}$	N_{20}	N_{40}	N_{30}	47.22 ± 1.31	151	560	160	12.57
4.	$P_{100}K_{50}N_{10}$	$N_{20}K_{50}$	N_{40}	N_{30}	49.95 ± 1.24	160	470	134	12.30
5.	$P_{50}K_{100}N_{10}$	N_{20}	$N_{40}P_{50}$	N_{30}	38.01 ± 0.65	122	417	119	12.10
6.	$(NPK)_{25}$	$(NPK)_{25}$	$(NPK)_{25}$	$(NPK)_{25}$	35.87 ± 1.21	115	455	130	12.10

Table 15

EFFECT OF NITROGEN FEED ON OPIUM YIELD AND MORPHINE CONTENT—1948

Variants			Yield of air-dried above-ground mass		Yield of air-dried opium		Percentage of morphine content of absolutely dry weight of opium
On filling containers	Rosette stage	Budding stage	g/container	%	mg/container	%	
$(PK)_{100}N_{20}$	—	—	40.1 ± 1.4	100.6	156.4	100	9.35
$(PK)_{100}N_{20}$	N_{30}	N_{50}	53.5 ± 1.9	133.0	296.0	189	12.50

yield. The application of phosphate fertilizers in two doses (Variant 5, Table 14)—half a dose when filling the containers and another half at the budding stage—reduced the yield of above-ground mass as well as opium yield and morphine content.

Thus phosphate and potash fertilizers used during experiments on growing produced a more beneficial effect on opium yield and morphine content when applied before sowing.

The use of a complete fertilizer (NPK) in equal portions at all stages increased the opium yield by 30% and the morphine content by 37% compared with the results obtained by applying a full dose when filling the containers (Variant 6). On the other hand, the yield with this variant was considerably less than that obtained with Variant 3, in which the full dose of phosphate and potash fertilizers as well as a small amount of nitrogen was given when the containers were filled; the rest of the nitrogen was given during the growing period.

Judging from the plant's development and the yield obtained, the application of fertilizer in this manner went a long way towards satisfying the opium poppy's demand for nutritious matter.

In the field experiments carried out, data was obtained which tally completely with the results of the growing period experiments (Tables 16, 17).

The data in Table 16 show that the most effective method of using nitrogenous fertilizers, where not applied at ploughing time, is to apply them in two stages : 30 kg of nitrogen per hectare during cultivation and 30 kg/ha during the growing period in order to feed up the plants. Applying the fertilizer in this way, a larger opium yield was obtained with a greater morphine content. With an application of nitrogenous fertilizers in doses of 60 kg of nitrogen per hectare during cultivation (Variant 3), the effect on opium yield was nil, and a background of $P_{60}K_{45}$ was negative in its result (Variant 7).

It should be noted that the application of nitrogenous fertilizers at depth during ploughing was also effective.

Potash fertilizers applied in the field experiments had a negative effect in all cases on opium yield and morphine content. A specially sharp fall in morphine content was observed when using potash fertilizers at two stages. In this case, the morphine content dropped by 1.39%.

Experiments over many years have shown (Table 17) that nitrogenous fertilizers applied at the rosette stage in doses of 60 kg of nitrogen per hectare, accompanied by adequate phosphate feeding, produces a substantial increase in opium yield. The morphine content, as a result of the application of nitrogenous fertilizers rose by 0.65% on average. These experiments provided a demonstration of how to use nitrogenous fertilizers effectively.

It may be taken as established, on the basis of the above considerations, that the opium poppy's need for fertilizers at the development stage is not uniform. During the initial period of development, it needs heavy phosphate feeding but very little nitrogen, and an abundance of nitrogenous fertilizers has an adverse effect on the opium yield. During the next period, beginning with the rosette stage when the plant grows rapidly, the need for nitrogen sharply increases. The amount of potash fertilizers required is insignificant, and an excess of potash in the soil lowers the opium yield and morphine content.

From the experiments carried out, it can be concluded that the system of feeding the poppy calls for the use of fertilizers

Table 16

EFFECT OF NITROGENOUS AND POTASH FERTILIZERS ON OPIUM YIELD AND MORPHINE—1940

No.	Time of applying fertilizer			Yield of absolutely dry opium		Percentage morphine content of absolutely dry weight	Morphine yield	
	During ploughing	During cultivation	For feeding purposes	kg/ha	%		kg/ha	%
1.	No fertilizer			9.66 ± 0.25	100	10.22	0.985	100
2.	Pc_{60}	—	—	11.84 ± 0.20	123	10.65	1.260	127
3.	Pc_{60}	N_{60}	—	11.70 ± 0.75	121	10.56	1.233	125
4.	Pc_{60}	N_{30}	N_{30}	13.53 ± 0.31	140	11.21	1.516	154
5.	Pc_{60}	$(NK)_2$	$N_{30}K_{15}$	12.82 ± 0.25	133	9.82	1.259	128
6.	$Pc_{60}K_{45}$	—	—	11.70 ± 0.11	121	10.10	1.181	120
7.	$Pc_{60}K_{45}$	N_{60}	—	10.76 ± 0.45	111	10.37	1.115	113
8.	$Pc_{60}K_{45}$	N_{30}	N_{30}	12.27 ± 0.32	127	10.87	1.334	135
9.	$N_{60}Pc_{60}$	—	—	13.01 ± 0.20	135	10.96	1.426	145
10.	$(NPc)_{60}K_{45}$	—	—	11.32 ± 0.34	117	10.77	1.219	124

Table 17

EFFECT OF NITROGEN FEED ON OPIUM AND MORPHINE YIELDS (AVERAGE FOR SIX YEARS)

No.	*Test variants*	*Yield of absolutely dry opium*		*Morphine content*	*Morphine content*	
		kg/ha	*%*		*kg/ha*	*%*
1.	No fertilizer	17.3	100	12.13	2.1	100
2.	90 kg/ha P_2O_5 at ploughing time	22.5	130	13.75	3.1	147
3.	90 kg/ha P_2O_5 at ploughing time + N60 for feed-up purposes at the rosette stage	26.3	152	14.40	3.78	176

at the main cultivation stage, at the time of sowing, and later, for feeding.

It is usual in practice to apply 60-90 kg P_2O_5 per hectare at the ploughing stage, and another 6 kg/ha in the form of granulated superphosphate at sowing time along with the seed.

At the rosette stage the plants are fed with nitrogenous fertilizers at the rate of 40-60 kg of nitrogen per hectare.